# NAVAL POSTGRADUATE SCHOOL MONTEREY, CALIFORNIA





# **THESIS**

THERMAL ANALYSIS OF PANSAT BATTERIES AND ELECTRICAL POWER SUBSYSTEM

by

Sheila A. Patterson

September, 1994

Thesis Advisor:

I. Michael Ross

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by

Sheila A. Patterson Lieutenant Commander, United States Navy B.S., United States Naval Academy, 1982

Submitted in partial fulfillment of the requirements for the degree of

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	September 1994
Author:	hule a Patt
	Sheila A. Patterson
Approved by:	Hoos
	I. Michael Ross, Thesis Advisor
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	Allan D. Kraus, Second Reader
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#### **ABSTRACT**

The thermal design of a spacecraft ensures proper heat transfer so all components and subsystems remain within prescribed temperature limits during all aspects of the spacecraft's mission. This thesis develops a point-to-point heat flow model of the Electrical Power Subsystem (EPS) and its associated housing for the Petite Amateur Navy Satellite (PANSAT). The analysis is performed to identify physical locations in the EPS where temperature may exceed the limits established to protect sensitive electronic components, and to define the expected environment of the batteries. The Integrated Thermal Analysis System (ITAS) and a Steady State Thermal Analyzer and Model Builder were used to perform steady state and transient analyses on the EPS; analysis of the batteries was performed using ITAS only. The simulated transient temperatures within the EPS housing remained within limits, but the batteries exceeded specifications. It is suggested that a passive thermal control technique be adapted for the batteries and its design be experimentally validated before flight.

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#### I. INTRODUCTION

#### A. REASON FOR ANALYSIS

The thermal environment for components within a spacecraft is a function of the irradiation from the sun and earth, internal heat dissipation, radiation from external surfaces to the space sink, and the conductive and radiatitive heat transfer paths between the heat sources and sinks. Thermal control design ensures proper heat transfer so that all components and subsystems remain within prescribed temperature limits during all aspects of the spacecraft's mission.[Larson and Wertz, 1992] Early thermal design forces the determination of operating temperature limits and identifies the power dissipation patterns of components to allow for maximum use of passive thermal control methods.

To build a thermal model of a spacecraft, a knowledge of dimensions, equipment placement and material properties is required. The spacecraft or area to be analyzed is divided into nodes. The nodes are chosen so that the conductive and radiative heat flow paths accurately represent point-to-point heat flows within the spacecraft.

The thermal design of the spacecraft is also highly dependent on the mission and stabilization system of the satellite. Typically unmanned, low earth orbit spacecraft can be controlled passively. Table 1 lists a typical operating environment for electric power system (EPS) components.

The power subsystem typically has the greatest interaction with the thermal control subsystem because all of the dissipated electrical energy within the spacecraft must be radiated into space. The terrestrial batteries to be used in the Petite Amateur Navy Satellite (PANSAT) have even a narrower temperature range than that listed in Table 1: the ideal operational

SYSTEM COMPONENT	TEMPERATURE RANGE
MILITARY PIECE PARTS FOR INTEGRATED CIRCUITS	-55 TO 125 DEGREES CELSIUS
BATTERIES	-6 TO 26 DEGREES CELSIUS
SOLAR ARRAY PANELS	-100 TO 100 DEGREES CELSIUS

Table 1. Temperature Ranges for Some Electrical Power System Components temperature for charging and discharging is 23 °C. Operations outside the published temperature range will cause the battery cells to degrade and become less efficient. This condition is explained fully in Chapter VI.

PANSAT has a very low power margin and must be able to maximize the power from the solar arrays and batteries. The sunlight and shadow zones of the orbit require that the batteries must operate for 40 percent of the time. There is only one EPS box for PANSAT. Other vital subsystems are redundant; for example, the Digital Control Subsystem has two fully capable boxes. The batteries within the Electrical Power Subsystem itself are redundant, but must be able to be recharged to full capacity after each use to ensure proper Depth of Discharge. The batteries and the EPS will be discussed more fully in the following chapters.

#### B. SCOPE OF THESIS

The purpose of this thesis is to develop a transient thermal model of the Electrical Power System and the associated housing for the Petite Amateur Navy Satellite (PANSAT). This thesis will also develop a steady state and transient analysis for the preliminary Nickel-Cadmium battery design, identifying any physical locations within the EPS and batteries where temperature limits are exceeded, and offering some recommendations for

passive thermal methods. Computer generated steady state and transient analyses using radiation, contact conductances and thermal capacitances through the equipment housing and the upper and lower equipment plates of the satellite were used to evaluate temperature ranges at the node points representing physical locations in the structure. To perform the analysis, circuit board layouts, heat dissipations of components, subsystem materials and cell efficiencies were required. Inward viewing box geometry was used to physically model the EPS and the battery model. Two models were used to verify steady state temperatures for the EPS. The transient analyses used equipment plate temperature profiles obtained from a recent transient analysis of the entire PANSAT structure.

#### II. BACKGROUND

# A. PETITE AMATEUR NAVY SATELLITE (PANSAT)

PANSAT was initiated in 1989 to provide interdisciplinary educational opportunities in space related areas to prepare postgraduate students for follow on work in space systems acquisition and design, and to develop a cadre of engineers and technicians at the Naval Postgraduate School (NPS) capable of developing and producing space qualified hardware. The current PANSAT design is the result of five years of research by NPS thesis students and the personnel of the Space Systems Academic Group (SSAG). Preliminary Design Review (PDR) was held in 1993 with the Critical Design Review to be held in late 1994.

The payload will be a direct sequence spread spectrum with a differentially coded, binary phase shift keyed (BPSK) communications system with an operating frequency of 436.5 MHz. The satellite will relay messages on a user-to-user basis in a simplex mode. The store and forward communication will allow amateur radio operators to send and receive messages through several short windows daily.[FRD, 1993]

The spacecraft will weigh approximately 150 pounds and is being designed to launch as a secondary platform from the space shuttle as part of the Hitchhiker Program. PANSAT has no attitude control and is free to tumble. Operational life is expected to be two years, with three to five minute communications segments per orbital pass. PANSAT will operate between 28.5° and 51.6° inclination and between 160-220 nautical miles.

The spacecraft consists of five subsystems: Communication (COMM), Electrical Power, Computer, Structure, and Ground Station Support. This

thesis focuses on the Electrical Power Subsystem, where the thermal control functions reside.

The PANSAT structure is Aluminum 6061-T6, built about a main load bearing cylinder connected to a lower equipment plate. The satellite is a tumbler, and since the solar panels will be mounted on the spacecraft skin, maximizing surface area increases power generation. A 26 sided polyhedron was the chosen structural configuration, already demonstrated on a Shuttle launch. A view of PANSAT is shown in Figure 1.

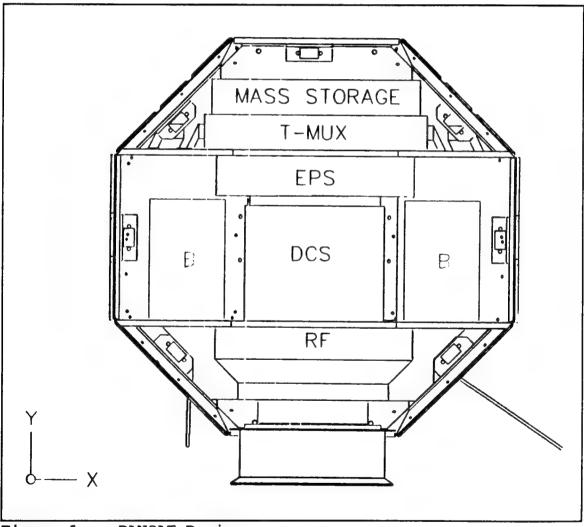


Figure 1. PANSAT Design

#### **B. ELECTRICAL POWER SYSTEM (EPS)**

The power to PANSAT is provided by seventeen 256 cm <sup>2</sup> solar panels consisting of silicon (Si) solar cells. The solar cells are K6700 Si cells connected in series in 4 strings of 8 cells each. The EPS also consists of electrical components needed to generate, regulate, and provide ± 15 V and +5 V power for the various power control electronics. In eclipse, two Nickel-Cadmium batteries of ten cells each maintain the bus voltage at 12 Vdc. The EPS control interface provides the power switching of all modules on the printed circuit boards (PCBs) in the Digital Control Subsystem (DCS) and COMM. The watchdog timer in the EPS is used to reset the DCS in the event of a failure. The EPS is also dependent on the Ni-Cd batteries for voltage regulation during all modes of operation. An EPS block diagram developed by the SSAG is shown in Figure 2.

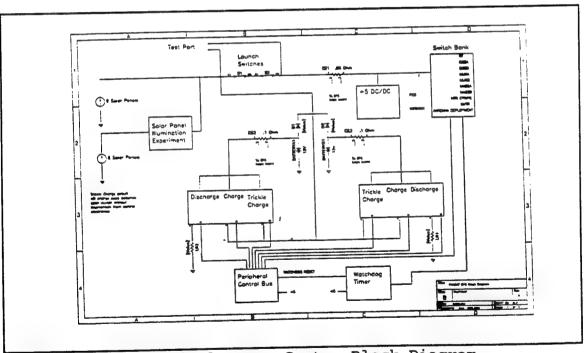


Figure 2. Electrical Power System Block Diagram

Voltage sensors monitor the solar panel bus and battery voltages, and thermal sensors monitor the temperature of the solar panels, batteries and electronics housings. Figure 3 shows the solar panels and box placement. The triangular panels of the satellite do not have solar panels and could be used for passive thermal control if required. The EPS is mounted underneath the upper equipment plate, and above the DCS and batteries, which are mounted on the top of the lower equipment plate.

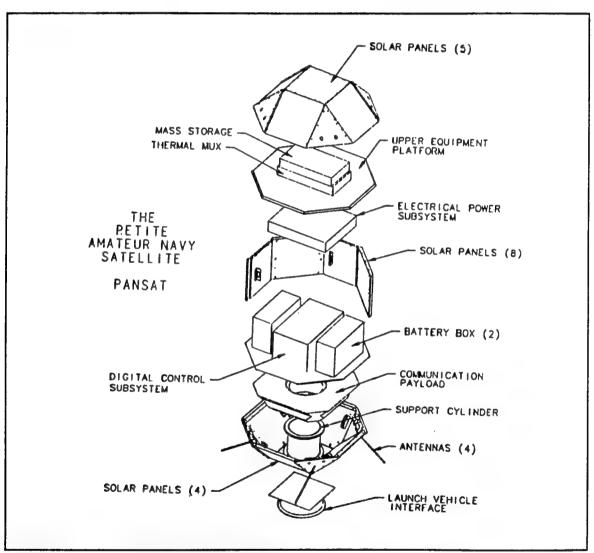


Figure 3. PANSAT Exploded View

#### PANSAT Design requirements include:

- 21.5 Watts at 15.2 Vdc average minimum electrical power at end of life (EOL)
- ●Minimum of 60 percent power conversion efficiency
- ●12 Volt regulated bus
- Nickel-Cadmium batteries with a 10 percent Depth of Discharge
   (DOD)
  - •Mission life of 24 months [FRD, 1993]

Terrestrial Ni-Cd batteries are the chosen type due to high energy density, cycle life and reliability. Space rated batteries will not be used because of their prohibitively high cost. Figure 4 shows the proposed F-cell,

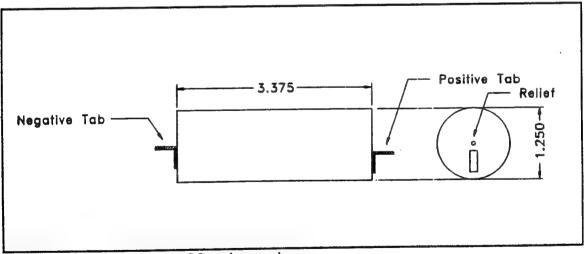


Figure 4. Ni-Cd Cell Dimensions

its 32 psi pressure relief valve and the cell dimensions. Although the F-cell has a pressure relief valve it is still considered a closed cell. The batteries will be fully discussed in Chapter VI.

#### III. STEADY STATE THERMAL ANALYSIS

#### A. BACKGROUND

A nodal analysis based on a finite difference model of PANSAT structure was performed in 1992 using the Intercept Thermal Analyzer Software Package. Input into the analyzer program is written by a model builder program which can be saved for modification for later use. THANSS is the model builder and the thermal analyzer is TASS. TASS provides the solution of Equation 3.1 using the Cholesky reduction in an iterative scheme

$$[A] \times [T] = [B]$$
 3.1

to solve for T (the node temperature vector). THANSS uses conductance paths to generate node to node conductances to form a set of heat balance equations (Equations 3.2, 3.4, and 3.13) where A is the matrix of conductances and B is a column vector of constant temperatures and heat inputs. The node temperatures obtained after each iteration are used to update the temperature dependent terms in the A matrix. This process continues until the change in the nodal temperatures between successive iterations is smaller than 0.05. When the iterative solution is obtained, the temperatures are then written into an output file. [Kraus, 1990]

This analysis resulted in a steady state temperature map of the PANSAT structure (including the square panels where the solar panels are mounted, the triangular panels, and both equipment plates). To accurately model the structure, the square panels were divided into nine equal nodes, the triangular panels were divided into six nodes, and the equipment plates eight nodes each. The model connects the nodes together through a network of user defined conduction paths and connects individual nodes

through constant temperature sinks through conduction and radiation.

Results of the steady state analysis for sunlight and shadow zones both with internal heat dissipation are shown in Appendix A.

Conductance values are either calculated or input by the analyst from separate calculations. There are ten different modes that can be selected to characterize node-to-node heat flow. Three of these methods were used for analysis of the Electrical Power System: heat flow between nodes for conduction (method designator 1), heat flow between nodes for radiation (method designator 3), and a constant heat input (method designator 10). The heat balance equation for conduction is

$$q = K_1 (T_2 - T_1)$$
 3.2

with the conductance,  $K_1$  determined from the Fourier Law and [A] = [K]

$$K_1 = k \frac{A}{\Delta L}$$
 3.3

where q is the heat flow,  $T_1$  and  $T_2$  define the node-to-node temperature difference for the path, k is the thermal conductivity of the material in Btu / ft - hr - °F or W/m° C, A is the cross sectional area for heat flow and L is the length of the heat flow path. The units of the conductance are Btu/hr °F or W / °C.

The heat flow equation by radiation is governed by the Stefan-Boltzmann Law shown in Equation 3.4.

$$q = \sigma F_A F_{\epsilon} A (T_2^4 - T_1^4)$$
 3.4

or

$$q = k_3 (T_2 - T_1) 3.5$$

where

$$K_3 = \sigma F_A F_{\epsilon} A(T_2 + T_1) (T_2^2 + T_1^2)$$
 3.6

Equation 3.6 derives from the fact that  $T_2^4$  -  $T_1^4$  can be written as the sum and difference of squares

$$(T_2^4 - T_1^4) = (T_2^2 + T_1^2) (T_2^2 - T_1^2) = (T_2^2 + T_1^2) (T_2^2 + T_1) (T_2 - T_1)$$
 3.7

Here  $\sigma$  is the Stefan-Boltzmann constant (1.713 x 10<sup>-9</sup> Btu/ft²-R⁴ or 5.669 x 10<sup>-8</sup>W/m²-K⁴),  $F_A$  is the arrangement or shape factor and  $F_E$  is the emissivity factor. For radiation between two non-black surfaces, (where a blackbody is a perfect absorber and emitter of radiation), the emissivity and absorptivity of the surfaces will not be equal to 1. The departure from ideal surfaces for two infinite plates in full view of one another is

$$F_E = \frac{1}{\frac{1}{\epsilon_1} + \frac{1}{\epsilon_2} - 1}$$
 3.8

where  $\epsilon_1$  is the emissivity of the first plate and  $\epsilon_2$  is the emissivity of the second plate. [Class notes AA 3804, July 1993] This closely approximates the configuration of the two printed circuit boards (PCBs) in the EPS. The shape factor (F<sub>A</sub>) accounts for the situation where the alignment of the surfaces prevents the interception of all of the emissions from the source. Other terms used to describe the shape factor include view, configuration and arrangement factor.

For radiation, TASS handles the heat flow by developing  $K_3$  to permit the use of a linear temperature difference (Equation 3.9)

$$q_r = K(T_2 - T_1) 3.9$$

by computing K<sub>3</sub> from

$$K_3 = \frac{\sigma A F_A F_E (T_2^4 - T_1^4)}{T_2 - T_1}$$

$$= \frac{\sigma A F_A F_E (T_2^2 + T_1^2) (T_2^2 - T_1^2)}{T_2 - T_1}$$

$$= \frac{\sigma A F_A F_E (T_2^2 + T_1^2) (T_2 + T_1) (T_2 - T_1)}{T_2 - T_1}$$
 3.10

so that  $K_3$  is indeed

$$K = \sigma A F_A F_E (T_2^2 + T_1^2) (T_2 + T_1)$$
 3.6

Because heat transfer by radiation is governed by

$$q = \sigma F_a F_F A (T_2^4 - T_1^4)$$
 3.4

the conductance value is entered by the user so that

$$q = K(T_2 - T_1) 3.11$$

The user needs only to enter the value and TASS handles the computation in accordance with Equation 3.6.

$$K = \sigma F_A F_E A \qquad 3.12$$

When a node is to have a constant temperature input, a tag of 10 is entered and the connecting node is specified as 999. Thus the third method of heat flow is in the form

$$q = K_{\sigma} 3.13$$

where  $K_q$  is a constant.

# B. BOUNDARY CONDITIONS FOR EPS ANALYSIS

The steady state structural analysis of PANSAT was conducted in 1992 with the transient analysis of the structure completed in January 1994. The segmented panels (or nodes) were taken individually to determine the number of connections (also known as branches) to other nodes. The type of connection (i.e., the mode of heat transfer for conduction, radiation and constant temperature) is specified as the tag number for the particular branch. Tag is used to avoid confusion between node and mode. Constant temperatures are given node numbers, beginning with 301. A total of 983 conductances from 232 nodes determined the total PANSAT thermal model. When the thermal analysis was run, the first file was a summary of the final temperatures of all the nodes, and was followed by the node temperatures after each iteration.

Models were run for steady state conditions in sunlight and shadow with and without internal heat dissipation. The runs with heat dissipations were used because the satellite low power mode is not much less than the high power mode. Appendix A shows that for the steady state analysis for sunlight with internal heat dissipation the temperatures range from 45.3 °C to 60.2 °C. The steady state analysis in the shadow zone (Appendix B) with

internal heat dissipation resulted in a temperature range of -70.6 °C to 66.6°C.

A transient analysis for the satellite was performed a year later using the same nodes. Average temperatures for the upper equipment plate for the first fourteen orbits are plotted in Figure 5, and for the lower equipment plate in Figure 6. Starting temperature was assumed to be 25 °C for Kennedy Space Center temperatures in October. Table 2 and Table 3 show the data breakout by node numbers for the upper equipment plate (nodes 211 to 218) and the lower equipment plate (node numbers 219 to 226). The average temperatures for the equipment plates were used as boundary conditions for the transient analysis of the Electrical Power System and the steady state and transient battery analysis.

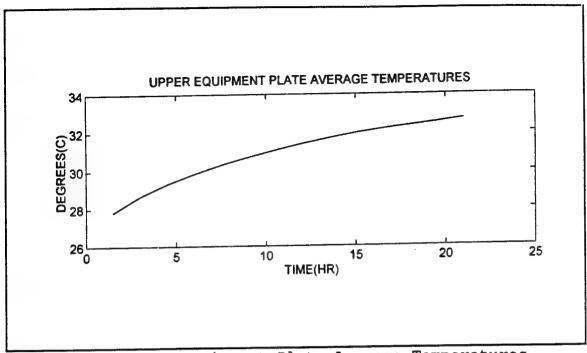


Figure 5. Upper Equipment Plate Average Temperatures

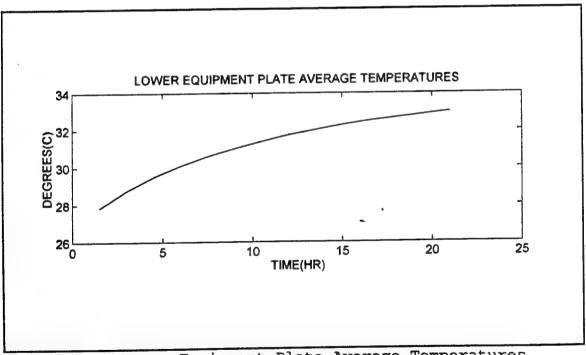


Figure 6. Lower Equipment Plate Average Temperatures

PASS	211	212	213	214	215	216	217	218
1	28.8	29.3	29.3	28.3	27.2	26.9	26.5	26.3
2	29.8	30.4	30.4	29.3	28.1	27.8	27.3	27.1
3	30.5	31.1	31.1	23.0	28.7	28.4	28.0	27.6
4	31.0	31.7	31.7	30.5	29.3	28.9	28.5	28.2
5	31.5	32.2	32.1	31.0	29.8	29.4	29.0	28.7
6	31.9	32.6	32.6	31.4	30.2	29.9	29.4	29.1
7	32.3	33.0	32.9	31.8	30.6	30.2	29.8	29.5
8	32.6	33.3	33.3	32.2	30.9	30.6	30.1	29.8
9	32.9	33.6	33.6	32.5	31.2	30.9	30.4	30.1
10	33.2	33.9	33.9	32.7	31.5	31.1	30.7	30.4
11	33.4	34.1	34.1	33.0	31.7	31.4	30.9	30.6
12	33.6	34.3	34.3	33.2	31.9	31.6	31.1	30.8
13	33.8	34.5	34.5	33.3	32.1	31.7	31.3	31.0
14	34.0	34.7	34.6	33.5	32.2	31.9	31.5	31.2

Table 2. Upper Equipment Plate Temperatures in Degrees C by Node

PASS	219	220	221	222	223	224	225	226
1	28.2	28.8	28.9	28.2	27.7	27.8	27.8	27.9
2	29.2	29.9	29.9	29.3	28.8	23.0	29.0	28.9
3	30.0	30.7	30.7	30.1	29.6	29.8	29.7	29.7
4	30.6	31.3	31.4	30.7	30.3	30.4	30.4	30.3
5	31.5	31.3	31.4	30.7	30.3	30.4	30.4	30.3
6	31.6	32.3	32.4	31.7	31.3	31.4	31.4	31.3
7	32.0	32.7	32.7	32.1	31.7	31.8	31.8	31.7
8	32.4	33.1	33.1	32.4	32.0	32.2	32.1	32.1
9	32.7	33.4	33.4	32.7	32.3	32.5	32.4	32.4
10	32.9	<sup>2</sup> 33.6	33.7	33.0	32.6	32.7	32.7	32.6
11	33.2	33.9	33.9	33.2	32.8	33.0	32.9	32.9
12	33.4	34.1	34.1	33.4	33.1	33.2	33.1	33.1
13	33.5	34.2	34.3	33.6	33.2	33.3	33.3	33.2
14	33.7	34.4	34.4	33.8	33.3	33.5	33.4	33.4
District Plate Temperatures in Degrees C by Node								

Table 3. Lower Equipment Plate Temperatures in Degrees C by Node

### IV. STEADY STATE ANALYSIS OF THE EPS USING THANSS

#### A. PROCEDURE THEORY

A thermal resistance may be defined as the reciprocal of the conductance.

$$R = \frac{1}{K}$$
 4.1

R is the resistance in ° F-hr/ Btu or ° C/W. This relationship does not apply exclusively to the conduction mode of heat transfer. If the analogy exists between the heat flow and the direct current statement of Ohm's Law

$$q = K \Delta T = \frac{\Delta T}{R}$$
 4.2

then it is analogous to

$$I = \frac{\Delta V}{R_E}$$
 4.3

where  $R_{\text{E}}$  is the electrical resistance and all of the d-c network thorems apply. The addition of thermal resistances in series and the combination of resistances in parallel are permitted operations. For example, the combination of two resistors in series is given by

$$R_C = R_A + R_B 4.4$$

and in parallel where  $R_{\text{C}}$  is the equivalent resistance.

$$R_C = \frac{R_A R_B}{R_A + R_B}$$
 4.5

#### **B.** DESCRIPTION OF NODES

To simplify calculations and to assure accuracy in the node descriptions, the printed circuit boards were divided into 72 nodes with each node having an area of 1 square inch. This size results in relatively easy calculations when using areas and lengths between nodes and between printed circuit boards. The top board nodes were numbered 1-72 with the bottom board nodes numbered 73-144. Appendix C shows the node numbering, which will be used for reference later in this chapter.

The boards have six layers, alternating copper and epoxy. It was assumed for the analysis that copper covered 25% of the top layer. This takes circuit board components into consideration. This layer is designated by  $R_1$ . The other two copper layers were assumed to have 100% coverage and are designated by  $R_4$ . The epoxy layers are homogeneous. Figure 7 describes the Node 1 to Node 2 upper board conductances. Appendix 3 shows the node numbers and their relationshps for reference.  $R_2$  describes the conductance of the polyimide (epoxy) layers in each node. To calculate the resistances of  $R_1$  through  $R_4$  Equation 4.6 is used.

$$R = \frac{12 L_i}{k_i w_i (th_i)}$$
 4.6

where L is the lenght of the heat flow path, th is the thickness of the contact area, w is the width, and k is the thermal conductivity of the material. Each epoxy layer is 0.01933 inches thick: each copper layer is 0.00134 inches thick. Table 4 lists the resistances calculated by equation 4.6 for the network shown in Figure 7.  $R_A$  through  $R_E$  are the equivalent resistances as the network is calculated, beginning with resistance  $R_A$  and working to resistance  $R_E$ . A sample calculation is included for resistance A.

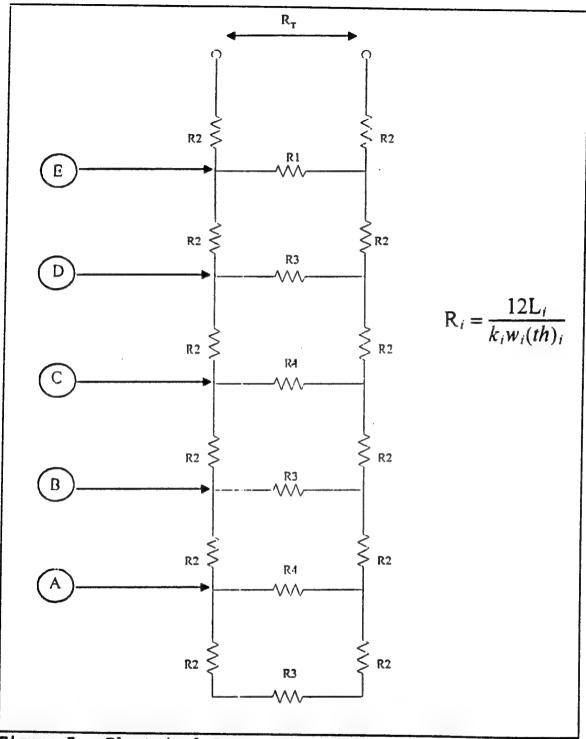


Figure 7. Electrical Power System Node 1 to Node 2

R <sub>i</sub> #	Li	<b>W</b> <sub>i</sub>	th	k <sub>i</sub>	R <sub>i</sub>
1	1.00	1.00	0.00134	385 (.25)	93.04129
2	.01933/2	1.00	1.00	0.15	0.77320
3	1.00	1.00	0.01933	0.15	4138.645
4	1.00	1.00	0.00134	385	23.26032

Table 4. Node 1 to Node 2 Resistances

$$R_A = \frac{(R_3 + R_2 + R_2) R_4}{R_3 + R_4 + 2 R_2}$$
 4.7

As a result, for Node 1 to Node 2

$$R_A = 23.13037$$

$$R_R = 24.53051$$

$$R_{c} = 12.79438$$

$$R_D = 13.79438$$

$$R_E = R_T = 13.16939$$

Using Equation 4.1, K = 0.075934 °F-hr / Btu.

The node 1 to node 9 calculations are based on the same relationships, so that conductance is 0.075934 °F- hr / Btu.

For the radiation from board to board

$$K = 0.1732 F_A F_E A$$
 4.8

 $F_A = 1.00$  because the boards are parallel to each other.

$$F_E = \frac{1}{\frac{1}{\epsilon_1} + \frac{1}{\epsilon_2} - 1}$$
 3.8

Because the emissivity of both boards is assumed to be 0.8,  $F_{\epsilon}=0.6667$ . After converting the node area into square feet

$$K = 0.1732 (1.0) (\frac{2}{3}) (\frac{1}{144}) = 0.801852 \times 10^{-3}$$
 4.9

Figure 8 describes the contact of the board layers to the housing rails.

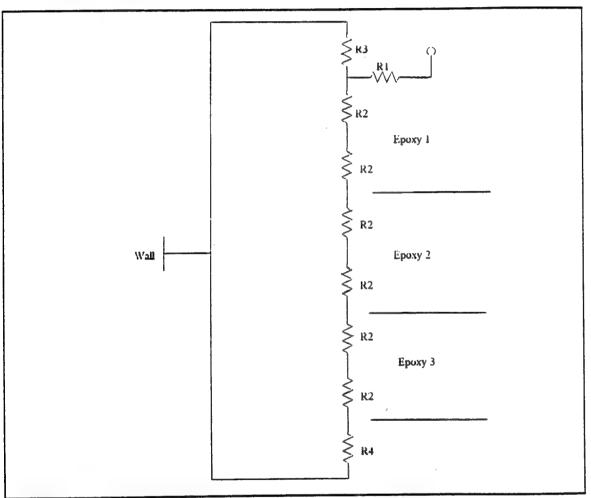


Figure 8. PCB Layers To Housing Conductances

Resistance  $R_1$  is copper and resistance  $R_2$  is epoxy. Resistances  $R_3$  and  $R_4$  are contacts with the railings.

 $R_1$  is half that of the previous  $R_1$  ( the path length has been halved).

$$R_2 = \frac{(12)(0.01933/2)}{(1)(0.2)(0.15)}$$
 4.10

 $h_c = 500$  for copper contact

 $h_c = 400$  for epoxy contact

$$R_4 = \frac{1}{400(0.2)(1/144)} = 1.88$$
 4.11

$$R_3 = \frac{1}{500 (0.2) (1/144)} = 1.44$$
 4.12

Figure 9 is a simplification of Figure 8.

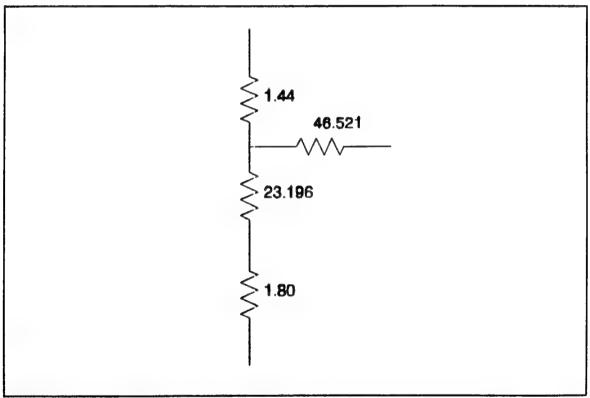


Figure 9. Equivalent Conductance of Figure 8

The equivalent resistance from the network shown in Figure 9 ( $R_T$ ) = 47.88.  $K_T$  is the equivalent conductance, or 0.020885 ° F-hr/ Btu.

Once the conductances were calculated an input file was created, listing the conductances for each node with its associated mode. The input file is shown in Appendix D. The conductance values are listed by node. Beginning at lines 7 and 8 in Appendix D, the node equation describes what node is connected to what, by how much, and by which tag. At line seven, the fixed point integer values are connections and tags. Table 5 describes Node 1 connections contained in line 7.

NODE			
CONNECTION	POSITION	HOW	TAG
2	TOP PCB	CONDUCTION	1
9	TOP PCB	CONDUCTION	1
73	воттом РСВ	RADIATION	3
301	CONSTANT TEMPERATURE	CONDUCTION	1
303	CONSTANT TEMPERATURE	RADIATION	3

Table 5. Node Connections To Node 1

Line 8 contains floating point real numbers which are the appropriate conductance values for the connection. Each node requires an even number of lines. The three constant temperatures defined for the railings and housing were all 33.5 °C. Appendix E lists the heat dissipation by node in watts. The conductances need only be input in one direction as THANSS calculates the reverse connection automatically.

Table 6 lists the results of the steady state analysis of the circuit boards. The highest temperatures appeared on the bottom boards where the heat dissipations were the highest. However, the amount of dissipated heat is relatively low. Temperatures ranged from 34.42 °C to 36.31 °C on the upper board to 34.77 ° to 38.02 °C on the lower board, well within standard operating temperatures for electronic piece parts. A run at 25 °C constant heat source temperatures compared very favorably with an earlier steady state analysis performed using the Integrated Thermal Analysis System (ITAS).

Tem	peratures,	dea	C DII BC	WILL	JS - 5. I	AII	ERSON	4 - K	UN A		
1	35.38	2	35.78	3	35.96	4	35.92		25.00		24.42
7		8	35.19	9	35.62		36.14		35.80 36.31		35.67
13		14	35.72	15	35.54	16	35.34	17	35.56	12 18	36.12
19		20	36.10	21	35.91	22	35.71	23	35.48	24	36.00
25		26	36.16	27	36.24	28	36.25	29	35.95	30	35.18 35.64
31		32	35.00	33	35.48	34	35.91	35	36.05	36	35.64 36.05
37		38	35.56	39	35.24	40	34.90	41	35.55	42	<b>35.96</b>
43		44	35.69	45	35.58	46	35.32	47	35.10	48	<b>34.8</b> 6
49		<b>5</b> 0	35.60	51	35.65	52		53	35.27	54	35.08
55	34.87	56	34.63	57	35.01	58	35.34	59	35.28	60	35.17
61	35.06	62	34.91	63	34.72	64	34.49		34.80	66	35 03
67	35.08	68	35.04	69	34.95	70	34.81	71	34.64	72	34.42
73		74	36.12	75	36.49	76	36.67	77	36.91	78	37.19
<b>7</b> 9		80	36.25	81	35.66	82	36.56	83	36.93	84	36.90
85			38.02		<b>37.9</b> 9	88	36.51	89	35.63	90	36.28
91			37.10		37.32		37.94	95	37.80	96	36.43
97			36.23		36.82		37.78	101	37.44 1	02	37.35
103	37.06 10		36.08 1		35.46		36.01 1		36.63 1		37.69
109	37.25 11		36.91 1		36.50 1		35.74 1		35.43 1	14	35.90
115	36.26 11		36.54 1		36.55 1		36.43 1		36.15 1		35.46
121	35.11 12		35.60 1		35.75 1		35.91 1		36.05 1		36.03
127	35.83 12		35.23 1		34.85 1		35.18 1		35.38 1		35.53
133	35.68 13		35.70 1		35.55 1		35.02 1		34.71 1		34.99
139 <b>3</b> 01	35.19 14 33.50 30		35.32 1 33.50 3		35.41 I 33.50	42	35.38 1	43	35.21 1	44	34.86

Figure 10. PANSAT PCB Temperature by Node

## V. TRANSIENT ANALYSIS OF EPS USING ITAS

## A. GEOMETRY GENERATION

To begin the analysis of the electrical power system, the geometry of the EPS was reproduced in the computer using the Integrated Thermal Analysis System (ITAS). The geometry was generated by piecing together, rotating and translating shapes from a geometry generation menu. These shapes were then stored in a PARTS file, which were then selectively plotted to allow for surface number and node number displays. The EPS was divided into three distinctly separate entities: the housing and the upper and lower circuit boards. Figure 10 and Figure 11 show the surface numbers and corresponding node numbers for the EPS housing. Each surface generated by ITAS is accessible for thermal node definitions and optical

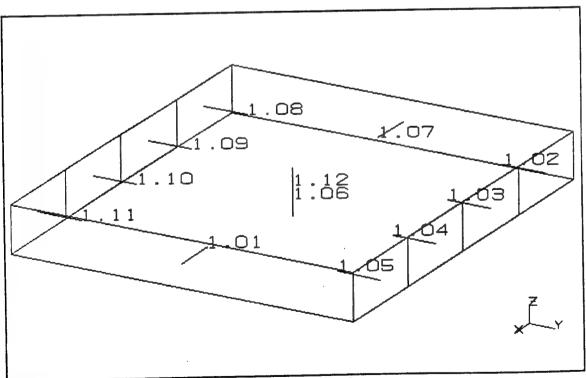


Figure 10. EPS Housing Surface Nodes

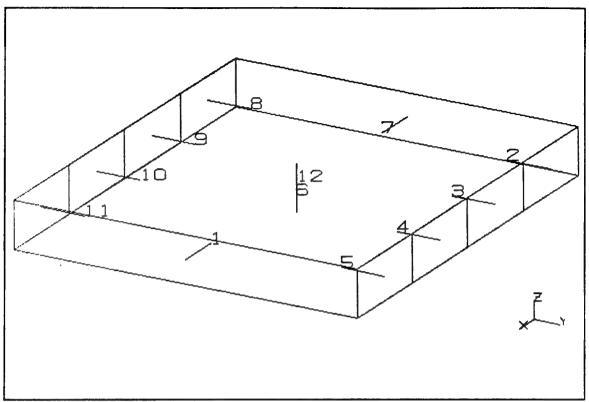


Figure 11. EPS Housing Node Numbers

properties definition. The housing is modelled as a six-sided box having 12 physical nodes. The dimensions of the housing are 9 inches in the X direction, 8 inches in the Y direction, and 1.569 inches in the Z direction. It is mounted underneath the upper equipment plate as seen in Figure 2 and Figure 3.

The upper printed circuit board is modelled as two four sided polygons. The polygons have node numbers from 2.01 to 2.18 and 3.01 to 3.12. This division of the upper equipment panel was done to accurately represent heat dissipations on the board and to define a workable number of conductance values. Appendix F shows both the surface numbers and node numbers for the upper PCB.

The lower PCB was constructed from 5 separate polygons: these node numbers ranged from 4.00 to 8.00. Appendix G shows the surface numbers and corresponding node numbers for the lower PCB. Figure 12 is a view of the integrated thermal nodes of both PCBs and the housing.

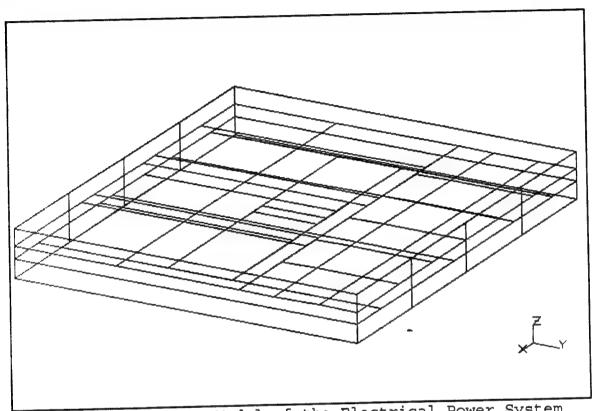


Figure 12. Geometry Model of the Electrical Power System

## B. THERMAL PARAMETERS

1. Radiation Conductance Parameters (Script-F)

Script-F factors are the energy quantities incident on each of the surfaces of an enclosure after multiple reflections from the surrounding surfaces. (ITAS User's Manual). The Script Fs are in the IR wavelength and are used during the thermal analysis to account for all thermal radiation interchange, and are calculated from the blackbody view factors in

conjunction with surface optical properties. Since the EPS is an enclosure with no view to space, the program is set to ignore the space node inclusion in the Script F calculations since surfaces inside the enclosures do not "see" surfaces outside the enclosure. [ITAS User's Manual, 1992]

### 2. Optical Properties Data

The optical properties data defines the properties of all surfaces and combines the geometric surfaces that have been created into thermal nodes. The optical properties listed in the Material Properties Library of ITAS were used for the housing (Aluminum 6061-T6) and for the copper layers of the printed circuit boards. These properties include the solar absorptivity (alpha) and infrared emissivity (epsilon) values. Individual capacitances and thermal dissipations were not defined in these screens but were defined in the User Node section. The surfaces that are listed in the Optical Properties entries in Appendix H are the geometric surfaces that ITAS generates.

#### 3. Non-Geometric Node Definitions

In addition to the Optical Property node generation, additional non-geometric nodes were created. These nodes do not have a physical presence in ITAS. Examples of these nodes included the rails in the EPS housing to which the circuit boards are secured; the PCB board layers, which alternate copper and polyimide; the upper equipment plate, to which the top of the EPS is mounted; and the component pin nodes. Table 6 indicates the non-geometric node assignments. These nodes are also known as diffusion nodes: diffusion nodes, although not part of the ITAS geometry file still have finite mass. Nodes are not numbered consecutively to allow for flexibility and also to allow easy identification. For example, all nodes that are numbered 9XX are either housing or railing nodes: all of these nodes are

made of aluminum. Nodes 16XX and 6XX, 14XX and 4XX, 12XX and 2XX are all copper layers of the printed circuit boards.

Node Number	Identification	Node Number	Identification
901-912	EPS housing	913	Equipment Plate
921-926	EPS rails	201-230	Top PCB top Cu
401-430	Top PCB mid Cu	601-630	Top PCB bot Cu
1201-1217	Bot PCB top Cu	1401-1417	Bot PCB mid Cu
1601-1617	Bot PCB bot Cu	101-130	Top PCB T poly
301-330	Top PCB M poly	501-530	Top PCB B poly
1101-1117	Bot PCB T poly	1301-1317	Bot PCB M poly
1501-1517	Bot PCB B poly	2XXX	Pins-Top PCB
3XXX	Pins- Bot PCB		

Table 6. Non-Geometric Node Numbers

The thermal capacitance of the diffusion nodes is entered in this screen. Thermal mass is also another name for thermal capacitance.

Thermal Mass = 
$$C = c \rho V$$
 5.1

where c is specific heat in cal/g °C,

 $\rho$  = density of the material in kg/m<sup>3</sup>,

V = volume of the material in m<sup>3</sup>.

ITAS requires C to be in W-min / °C. To convert to the correct units the following conversion factor is used.

$$C = \left(\frac{cal}{g^{\,2}C}\right) \left(\frac{kg}{m^3}\right) \left(m^3\right) = \frac{cal}{(.001)^{\,2}C}$$
 5.2

$$1 \ cal = 1.163 \ x \ 10^{-6} \ kw-hr = 1163 \ x \ 10^{-6} \ W-hr$$
 5.3

$$1163 \times 10^{-6} W-hr = 6.978 \times 10^{-2} W-min$$
 5.4

$$\frac{6.978 \times 10^{-2} \text{ W-min}}{(0.001)^{\circ} \text{ C}} = 69.78 \text{ W-min/}{\circ} C$$
 5.5

This is the conversion factor used in Appendix I to calculate the thermal masses of all physical nodes. The following values were used in the calculations. [Penton Publishers, 1986]

EPS Housing Thickness	0.2 in
<b>Equipment Plate Thickness</b>	0.125 in
PCB Board Copper Layer	0.000134 in
PCB Board Poly Layer	0.001933
Density of Aluminum	2728 kg/m³
Density of Polyimide	1950 kg/m³
Density of Pin Material	8378 kg/m³
Density of Copper	8666 kg/m³
Specific Heat of Al	0.199 cal/kg °C
Specific Heat of Cu	0.098 cal/kg °C
Specific heat of Ni-Steel	0.11 cal/kg ° C
Specific Heat of Polyimide	0.31 cal/kg °C

Since ITAS allows total capacitance of each surface of the nodes to be entered into the model if the remaining surfaces are zeroed out. For pin

conductances, the total thermal mass of the pins in each major node were considered as one node. For example, Node 2011 is the total capacitance of all pins through the top layer of geometric node 3.01.

Heat dissipations were also entered in this screen. These dissipations were obtained from the PANSAT design team. The component list and PCB board layouts are included as Appendix J. The top board design is currently much more mature than the lower board design and estimated heat dissipations were more accurate. Appendix K is the Node Data Entry for Thermal Analysis for the EPS.

### 4. Conductance Definitions

All conductances entered into the EPS model were defined as linear (two way); this type of conductance also applies to the nodes defined by ITAS. All conductance values were precalculated and entered into the model: unlike THANSS, radiation modes are calculated by ITAS. Equation 3.3 was used to calculated all conductances not involving contact conductances.

$$K = \frac{k A}{L}$$
 3.3

Conductances not involving contact conductances included EPS housing to housing nodes; EPS housing to railing nodes (since the rails will be part of the housing); copper board nodes to copper board nodes and polyimide to polyimide nodes: and pin segment nodes to pin segments. Pins were modeled as one equivalent pin through each geometric node; however, each pin was divided into six nodes since they traverse through the board layers.

#### 5. Contact Conductances

Contact conductance is defined in Equation 5.6.

$$h_c = \frac{(1.25) (k_s) (\frac{P}{H})^{.95}}{S_r}$$
 5.6

$$k_{s} = \frac{2 k_{1} k_{2}}{k_{1} + k_{2}}$$
 5.7

where P = contact pressure of the surfaces, chosen as 15 psi for all contact.

H = hardness of the material. Brinell hardness numbers were used.

 $S_r = surface roughness$ 

To calculate total conductance, first the conductance of the first material is calculated using Equation 3.3, resulting in  $K_1$ . Then the conductance of the second material is calculated, resulting in  $K_2$ . The total conductance ( $K_T$ ) is calculated by Equation 5.8, with the results in W /° C.

$$K_T = \frac{1}{\frac{1}{K_1} + \frac{1}{h_c} + \frac{1}{K_2}}$$
 5.8

The ITAS node-to-node conductance calculations are shown in Appendix L, with the conductance data entry in Appendix M.

#### 6. Temperature Profile

ITAS uses temperature profiles for time varying boundary nodes.

Boundary nodes without time variation must be input into the user-node definition section. A temperature profile (Figure 13) of the upper equipment

plate obtained from the THANSS/TASS transient analysis of the spacecraft structure used in the EPS analysis. The initial temperature was an estimate of Kennedy Space Center temperatures in October.

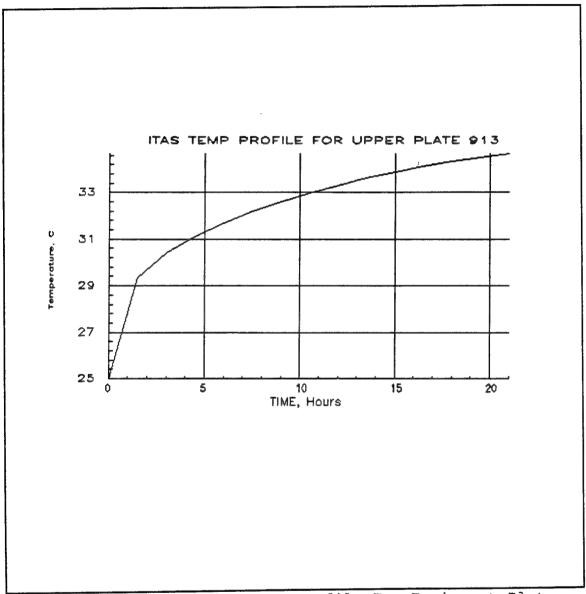


Figure 13. ITAS Temperature Profile For Equipment Plate

### VI. THERMAL ANALYSIS OF BATTERIES

### A. NICKEL-CADMIUM BATTERIES

Batteries can either be primary or secondary; secondary batteries can be recharged and reused. Batteries are made of cells that can be linked together in series or parallel. Cells linked in series have the positive terminal linked to the next cell's negative terminal: in a parallel connection positive terminals are linked to positive terminals and negative to negative.

PANSAT's two batteries have 10 cells each linked in series. In series connections the voltage of the connected cells add while the capacity (normally measured in ampere hours) remains constant.

Sealed nickel cadmium cells operate as a closed system that recycle gases created within the cell, so that no electrolye is lost. Sealed cells with a resealable vent for safety are still considered sealed cells. Nickel-cadmium cells (Ni-Cd) have a higher energy to volume ratio than most other secondary batteries, have a relatively high rate of discharge, and can recharge quickly. Ni-Cd batteries are known for their long storage and operating life, can operate over a wide range of temperatures and environments maintenance free. Additionally, Ni-Cd batteries can handle continuous overcharge so the battery can be maintained in a ready state until needed. [Gates Energy Products, 1992]

Temperature is a very important condition for Ni-Cd batteries. The effective internal resistance of these cells is at a minimum when cell temperature is between 20 °C and 40 °C. Figure 14 shows the relationship between cell disharge temperature and the effective internal resistance. Temperature also effects a cell's effective no-load voltage. For an Ni-Cd

cell, the effective no-load voltage is near the peak at room temperature: the decline is more pronounced at cooler temperatures. Figure 15 shows the

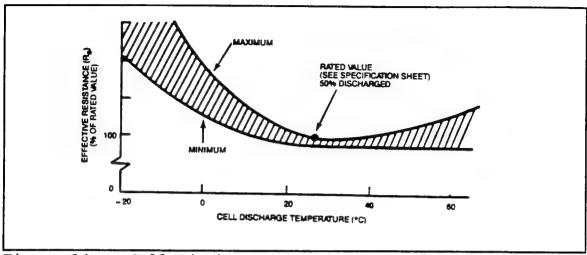


Figure 14. Cell Discharge Temp vs Internal Resistance "From Ref. [Gates, 1992]".

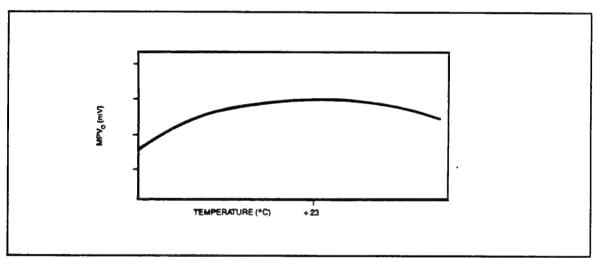


Figure 15. Cell Discharge Temperature vs No-Load Voltage "From Ref. [Gates, 1992]".

relationship between cell discharge temperature and no-load voltage.

An increase in cell temperature also has a negative effect on cell capacity. At elevated temperatures more charge is required for the cell to

become fully charged, and the higher temperatures also decrease the cell capacity to below standard. Cell capacity while charging is not normally affected by temperatures below 23 °C, however, lower temperatures (below 23 °C) have a negative effect on cell capacity during discharge. Room temperature is the ideal environment for PANSAT's batteries. Space rated Ni-Cd batteries would be the technical choice for PANSAT; however, the cost of space rated batteries (approximately \$200,000) is prohibitive.

PANSAT batteries are redundant: only one battery will operate at a time. However, the batteries must recharge to full capacity between each use for optimum performance. The current power budget is being examined to determine how long each battery will take to recharge after each use. A typical Ni-Cd battery will require about 160% of energy stored to recharge.

## B. BATTERY GEOMETRY MODEL

To model the PANSAT battery, it was necessary to include the Digital Control Subsystem and the Electrical Power Subsystem in the model due to the proximity in the spacecraft. The model was built using ITAS. The two batteries and the DCS were the mounted on the lower equipment plate, built by connecting seven polygons. The spacecraft structure was built around the lower equipment plate, and the upper equipment plate, with the Electrical Power Subsystem (EPS) attached was added. The build progression is demonstrated in Appendix N. The geometric battery thermal model is shown in Figure 16.

After building the geometry model each surface was assigned a surface number and a node number. An example of this assignment is shown in Appendix O. The surface number and node number are related in the property data information of the model, shown in Appendix P. This is where the absorptivities and emissivities of the structure and box housings

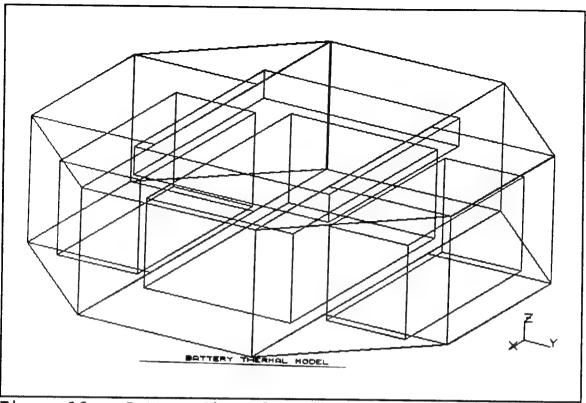


Figure 16. Battery Thermal Model

are listed. Since the box housing designs are not finalized, Aluminum- 6061-T6 was chosen. This material has an absorptivity of 0.4 and an emissivity of 0.79. Additionally, every surface on the boxes is given its own surface number and node number.

### C. BOUNDARY CONDITIONS

Since a large percent of the model required the incorporation of PANSAT's structure, boundary nodes were used to define temperatures on areas that had already been analyzed. Surfaces that were defined as boundary nodes have temperatures which remain constant. The results from the transient analysis of PANSAT's structure were used. The structure was divided into areas as seen in Figure 17. Each square area is divided into nine

equal nodes: the triangular areas are divided into six unequal nodes. The sections affecting the battery model are sections one through eight.

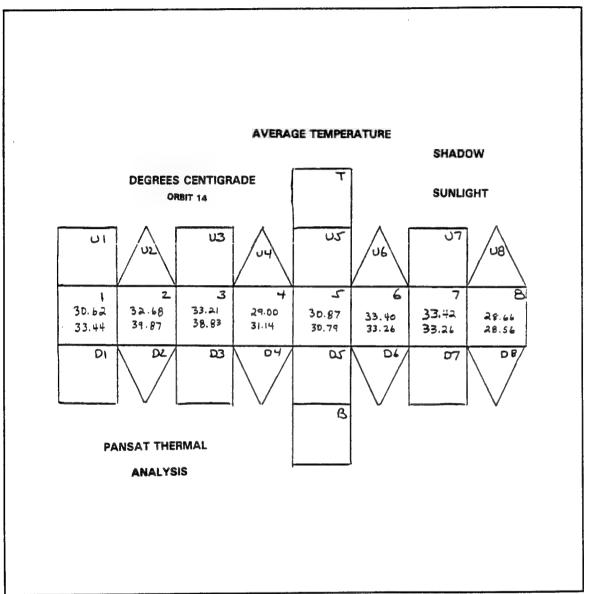


Figure 17. PANSAT Structural Divisions

Appendix Q lists the transient temperatures with internal heat dissipation by node for the shadow and sunlit zones for orbit 14. This was chosen since the spacecraft temperatures are leveling out: however, worst case

temperatures were not extrapolated. Table 7 relates the structural number of Figure 17 to the node numbers of Appendix Q, and then lists the average temperature for that area for both shadow and sunlight.

	NODE	AVG. TEMP	AVG. TEMP	
SECTION	NUMBERS	SHADOW	SUNLIGHT	S/C AREA
1	1-9	30.6	33.4	WALL
2	10-18	32.7	39.9	WALL
3	19-27	33.2	38.8	WALL
4	28-36	29.0	31.1	WALL
5	37-45	30.9	30.8	WALL
6	46-54	33.4	33.3	WALL
7	55-63	33.4	33.3	WALL
8	64-72	28.7	28.6	WALL
N/A	219-226	32.9	33.7	LOWER PL
N/A	211-218	32.1	32.9	UPPER PL

Table 7. Average Temperatures in Celcius for Pass 14

These temperatures were used as boundary nodes, indicated as negative numbers in Appendix R. This appendix also lists the thermal masses (capacitances) for all hardware nodes. The explanation for thermal mass calculation is contained in Chapter V; the thermal mass calculations are included as Appendix S. Heat inputs to each box were estimated and defined in Appendix R as a node with no mass. This heat input was attached to the six walls of the housing where that heat input resides, and

the heat was conducted outward through the walls. EPS boundary conditions were derived from the transient analysis.

Conductance values were calculated as in Chapter V and included in the ITAS Conductor Data Entry. Only surfaces within the boxes themselves or conductances between the heat nodes and the boxes are included since the upper plate, lower plate, and sidewalls are defined to have constant temperatures.

### **VII. RESULTS AND RECOMMENDATIONS**

### A. ELECTRICAL POWER SYSTEM

The analysis of the EPS transient analysis can be divided into three areas; the housing nodes, the upper board nodes, and the lower board nodes.

### 1. EPS Housing Nodes

Figures 18 and 19 show the temperature versus time plots for the EPS housing sidewalls and the top and bottom of the housing. As it would be be expected for a node which touches the outside edges of the housing, the

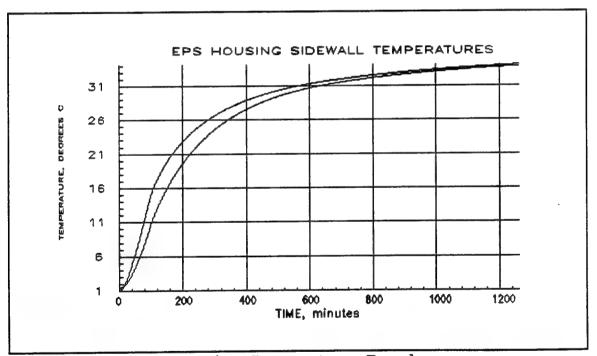


Figure 18. EPS Housing Temperature Trends

temperatures start low and become warmer. The bottom plate in the EPS housing would tend to be warmer than the top because the bottom has

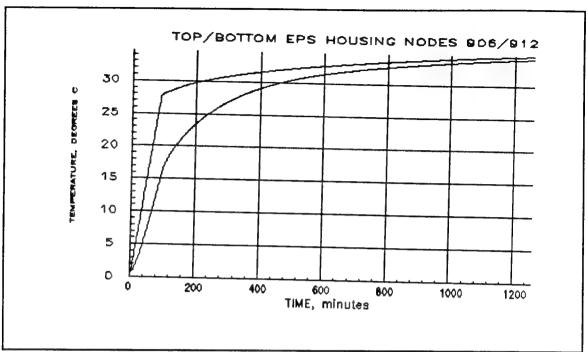


Figure 19. EPS Housing Trends

more heat dissipation. One drawback to the present analysis is that there was only enough information for a temperature profile of the lower equipment plate for 14 orbits. This, in effect, results in a transient analysis for that period of time and a steady state analysis for the following time.

#### 2. Printed Circuit Boards

From Figure 20 it is apparent that any node that is attached to the housing sidewalls is going to experience a trend similar to the housing itself. In the case of the top PCB, nodes which butt up to the housing start cold and see a decreasing slope, starting to level off after about 17 hours. Nodes that do not touch the sidewalls (midboard in this case) remain between 20°C to 25 °C for the duration. This board remains cooler than the bottom PCB because the heat dissipations in the upper board are relatively low.

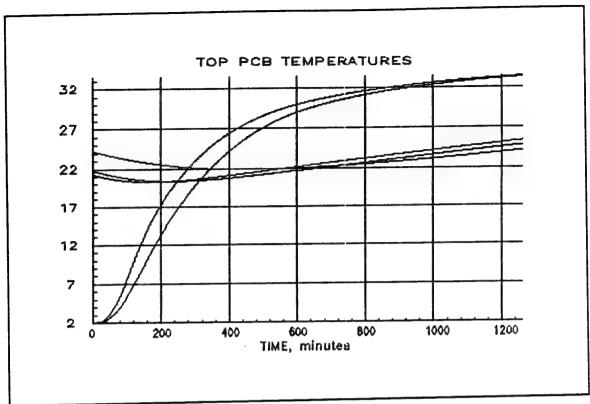


Figure 20. Upper PCB Results

The bottom PCB, as shown in Figure 21, has a similar curve for those nodes which attach to the rails, with the resulting final temperature very similar to the upper PCB. However, midboard nodes are approximately 4-5 degrees warmer on the bottom board, where the highest heat dissipations are concentrated.

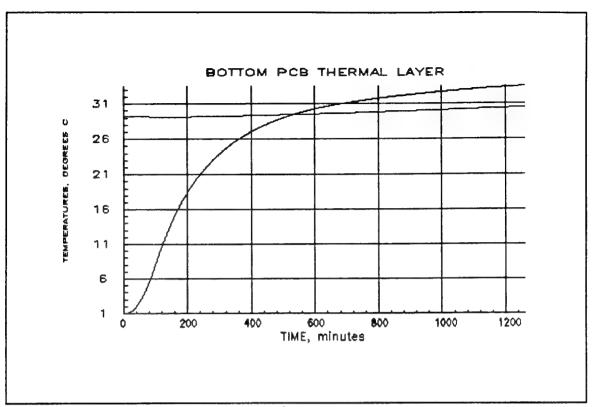


Figure 21. Bottom PCB Trends

#### **B. BATTERIES**

A steady state analysis was performed first on the battery. A copy of the results of both the steady state and the transient analysis is included as Appendix V. The transient analysis shows Battery A, Battery B, and the DCS at 33.7 ° C.

ITAS would not allow the model to be run as an enclosure. An ideal case would have been to run the battery first as an enclosure similar to the procedure used for the EPS. Since the cell information was not available, this run was performed to give a general battery environmental range. The analysis was effectively a steady state analysis since most of the structure had boundary nodes attached. This temperature is within the advertised

advertised operating ranges for a battery but is some distance from the ideal 23 °C. A second analysis was performed simulating a layer of Multilayer Insulation (MLI) on the bottom of both batteries. The result of this analysis can be seen from Figure 22. Although the initial temperatures are lower, the boxes quickly heat up. A third run insulating all six sides reduced the temperature by 3 °C to 30.7 °C.

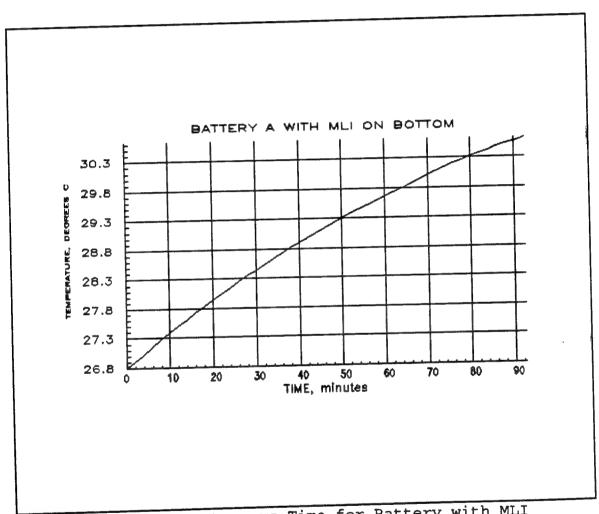


Figure 22. Temperature vs Time for Battery with MLI

### C. RECOMMENDATIONS

To make the thermal analysis more realistic for the Electrical Power System, duty cycles for the printed circuit boards need to be established. This would give a more accurate time versus temperature plot. For the batteries, cell selection would allow the modelling of the cells inside the batteries as demonstrated in Appendix W. Dissipations for the high power use boxes would contribute to the accuracy of the model. As the individual boxes are created by ITAS, the spacecraft subsystems can be combined into a viable and accurate spacecraft model.

This analysis is only as accurate as the boundary conditions. This model should be rerun when boundary conditions obtained from the transient analysis of PANSAT structure using ITAS are completed.

ITAS was created to model spinning and stationary spacecraft. When PANSAT design is mature enough to run the entire model, there is an option in the Parameter Set Up and Alteration Menu for user defined spacecraft attitudes, where the satellite can be rotated in time on the X-Y-Z axes to more accurately represent a tumbling body.

ITAS can accurately represent the orbit of the satellite, and allows two methods. The first method requires the definition of the inclination, sun Right Ascension and Declination, and the Longitude of the Ascending Node. The other method requires definition of the beta angles. Both methods define perigee and apogee, so that time spent in sunlight and time spent in shadow are considered in the satellite's environment. The most likely orbit, looking ahead with shuttle mission manifests, suggests planning for a 51.6° inclination and a 213 NM circular orbit.

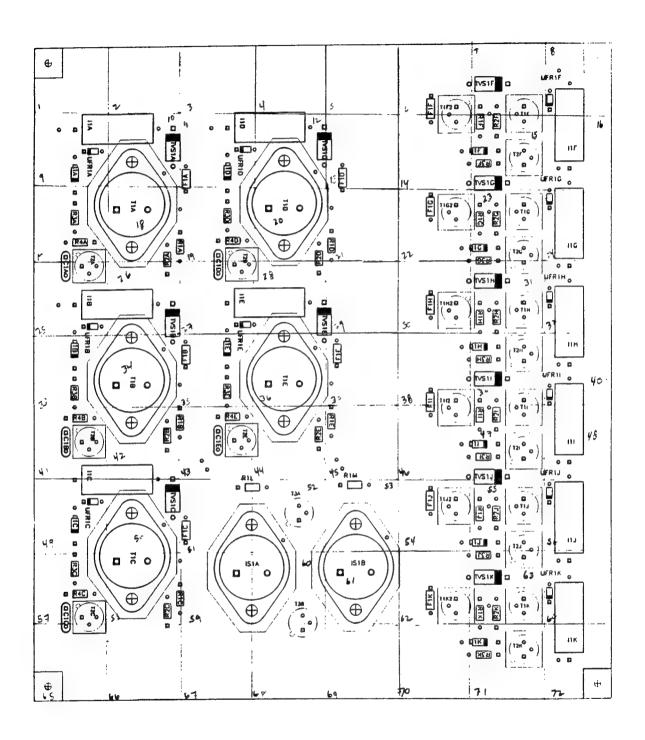
# APPENDIX A. PANSAT STEADY STATE TEMPS IN SUNLIGHT

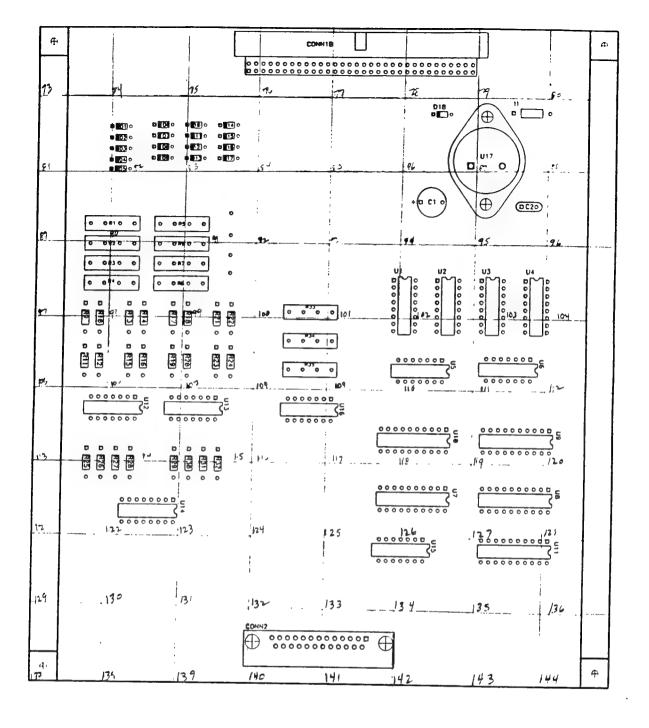
									Page No.	1
DANG	SAT - STE	YOAS	STATE - S	UNL	GHT ZONE	- WITH	INTERN	IAL H	EAT DISSIPATION	
Tempe	eratures	dec	ıC							
1	54.98	2	57.32	3	59.02	4	53.88	5	56.55 6	58.84
7	53.63	8	55.55	9	57.55	10	64.39	11	65.71 12	65.90
13	64.44	14	66.16	15	66.49	16	61.06	17	62.18 18	62.52
19	64.12	20	63.05	21	61.13	22	65.46	23	64.24 24	61.74
25	62.28	26	61.51	27	59.63	28	55.48	29	53.59 30	52.79
31	54.99	32	52.71	33	51.62	34	53.55	35	52.01 36	51.35
37	51:82	38	51.59		51.60	40	50.76	41	50.59 42	50.82
43	51.37	44	51.37	45	51.53	46	51.62	47	51.80 48	52.02
49	52.04	50	52.41	51	52.65	52	52.10	53	52.33 54	52.55
55	52.52	56	52.34	57	51.47	58	52.86	59	52.60 60	51.47
61	53.11	62	52.98	63	52.18	64	48.10	65	47.91 66	49.27
67	47.95	68	47.46	69	48.96	70	48.85	71	48.42 72	49.51
73	49.42	74	52.32		58.48	76	51.94	77	56.38 78	59.60
79	53.83	80	57.12	81	59.59	82	64.99	83	64.86 84	63.83
85	65.70	86	65.11	87	66.18	88	62.35	89	59.82 90	57.10
91	64.39	92	62.35	93	59.92	94	63.36	95	61.71 96	59.46
97	52.58	98	51.86	99	52.36	100	51.26		53.86 102	52.37
103	48.07		44.92		44.12	106	48.10	107	46.00 108	45.74
109	50.27		49.21		48.95	112	45.59	113	45.67 114	47.48
115	47.75	116	49.05		49.52		44.90	119	44.92 120	45.32
121	46.75		46.39		46.29	124	49.21 45.43	125	48.94 126	48.41
127	45.90		46.22	129	44.97	130	45.43	131	46.38 132	47.89
133	49.96	134		135	53.56	136	47.60	137	49.41 138	53.08
139	46.96	140		141	53.13	142	57.85		58.21 144	58.69
145	58.77	146	62.04	147	62.32	148	57.53	149	56.13 150	54.21
151	57.53	152		153	52.82		56.64	155	53.07 156	51.50
157	50.39			159	49.92	160	49.00	367	E.: 82 162	50.60
163	50.26		50.41	165	50.65	166	48.66	167	48.35 169	49.35
169	48.97	170	47.28	171	49.22	172	50.37		50.63 174	50.98 50.49
175	51.27		54.24			178	51.72		51.14 180 48.74 186	48.11
181	50.83		49.86			184	50.46		48.63 192	48.54
187	47.21					190	46.91 44.97	191	47.58 198	52.66
193	44.30	194	46.16			196	47.11	197	46.56 204	47.86
199	46.52	200	49.44	201	54.75	202				50.18
205	46.43			207	48.40	200	45.99 56.97	203	54.40 216	53.37
211	58.00	212	58.41	213	58.30 54.88	22A	56.02	221	56.09 222	54.86
217	52.53			219			54.02	227	53.85 228	53.26
223	53.86	224	53.78	225		220	47.90	221	33.03 ==0	22.20
229	51.16		50.79	231	40.4/	434	47.30			
301	-272.80									

# APPENDIX B. PANSAT STEADY STATE TEMPS IN SHADOW

									Pa	ge No.	1
PAN	ISAT - STI	EADY	STATE -	SHADOW	ZONE -	WITH	INTERNAL	HEAT			
	eratures										
. 1	-19.14	2	-19.99	3	-20.56	4	-18.34	5	-19.32	6	-19.99
7	-16.10	8	-17.14	9	-17.65	10	-21.82	11	-21.92	12	-21.63
13	-20.83	14	-20.72	15	-19.87	16	-18.65	17	-18.29	18	-15.44
19	-20.86	20	-20.75	21	-20.73	22	-20.03	23	-20.14	24	-20.19
25	-17.47	26	-17.81	27	-17.93	28	-20.84	29	-20.63	30	-19.70
31	-20.23	32	-19.81		-18.54	34	-18.17	35	-17.85	36	-16.89
37	-15.75	38	-14.72	39	-13.46	40	-14.94	41	-13.27	42	-11.58
43	-13.84	44	-12.45		-11.21	46	-10.08	47	-9.24	48	-8.99
49	-7.89	50	-6.78		-6.50	52	-8.06	53	-7.29	54	-7.12
55	-9.28	56	-9.74		-10.81	58	-6.96	59	-7.61	60	-9.01
61	-7.67	62	-8.18		-9.19	64	-14.46	65	-15.52		-16.85
67	-13.05	68	-14.63		-15.68	70	-12.57	71	-13.70		-14.61
73	-22.36	74	-24.09		-25.30	76	-22.12	77	-23.14	78	-24.54
79	-20.75	80	-21.69		-22.36	82	-25.89	83	-25.88	84	-24.88
85	-24.87	86	-23.35		-23.37	88	-25.80	89	-25.26	90	-24.27
91	-24.93	92	-24.34		-22.48	94	-22.66	95	-22.31	96	-21.87
97	-23.37	98	-23.22		-22.69		-22.34		-22.11		-21.47
103	-22.51		-20.87		-18.13		-21.13		-19.28		-16.09
109		110	-17.80		-15.57		-15.17		-15.02		-12.88
115	-12.24		-11.56		-10.70		-15.61		-17.25		-18.41
121	-13.71		-14.89		-15.65		-12.85		-13.81		-14.76
127	-19.81		-20.18		-18.39		-18.92		-16.96		-18.62
133	-15.03		-15.38		-17.14		-15.21		-17.17		-18.68
139	-14.50		-17.04		-18.87		-18.88		-18.47		-19.43
145	-19.44		-19.59		-19.64		-17.73		-17.47		-17.44
151	-19.37		-19.00		-18.53		-19.44		-18.79		-18.08
157	-18.05		-17.21		-18.05		-17.13		-17.16 -11.47		-16.83 -8.60
163	-13.53		-11.66		-10.02		-13.95 -8.40				-7.32
169	-14.16		-11.15		-7.36		-8.40		-7.93 -9.45		- 7.32
175	-6.85		-2.19		-2.04 -9.09		-5.65		-7.91		-9.34
181	-6.35		-7.57				-3.65		-11.10		-11.38
187	-12.97		-14.11 -22.76		-12.09 -24.46		-21.20		-24.10		-25.41
193	-20.05		-24.54		-25.83	-	-10.78		-13.59		-15.85
199	-21.99				-25.83	_	-10.78		-13.59		-15.65
205	-12.25		-14.59		-16.46		-13.09		-15.07		-17.72
211	-18.92		-19.12		-19.11		-18.23				
217	-14.09		-14.19				-14.04		-14.20 -13.80		-13.39
223	-12.32		-11.53 -13.39		-11.48 -14.59		-12.52	221	-13.80	225	-12.66
229	-14.06	230	-13.39	231	-14.58	232	-13.79				
301	-272.80										

### APPENDIX C. EPS NODE DIVISIONS





### APPENDIX D. THANSS/TASS INPUT FILE

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92.3000
           92.3000
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.759341E-01 .759341E-01 .759341E-01 .801852E-03 .801852E-03 .682600E
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6 211	281	301	371			
			.759341E-01		3033	9
7 221	291	311	381		.801852E-03	
	301	321	391	1033	3033	9
7 231	750241E-01	750341F-01			.801852E-03	-
6 241	311	401	1043	3011	3033	
7503415-01	750341E_01		.801852E-03			
	341	411	1053	3011	3033	9
7 251	7503418-01	759341E-01	.801852E-03		.801852E-03	.341300E
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7 261	7503415-01	759341E-01			.801852E-03	.204780E
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7 271	7502415-01	7503415-01			.801852E-03	.477820E
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7 281	250241E-01	7502415-01	7503416-01		.801852E-03	.273040E
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7 291	3E0341E-01	7E03/1E_01	750341F-01		.801852E-03	
	371	391	461	1103	3033	
6 301	3503412001	7502415-01	.759341E-01			
	381	401	471	1113	3033	9
7 311	3603436-01	7503415-01			.801852E-03	.102390E
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7 321	3503416-01	7502415-01	2012525-03		.801852E-03	
	421	491	1133	3011	3033	9
7 331	7E0341F01	7503/15-01	801852F-03		.801852E-03	
	411	431	501	1143	3033	9
7 341	759341E-01	759341E-01			.801852E-03	.156998
6 351	421	441	511	1153	3033	
759341E-01	.759341E-01	.759341E-01	.759341E-01		.801852E-03	
6 361	431	451	521	1163	3033	
			341	1100	3033	
.759341E-01	.759341E-01					
7 371	.759341E-01 441	.759341E-01 461	.759341E-01 531	.801852E-03 1173	.801852E-03 3033	9
7 371	.759341E-01 441	.759341E-01 461	.759341E-01 531	.801852E-03 1173	.801852E-03 3033	9 .682600E
7 371 .759341E-01 7 381	.759341E-01 441 .759341E-01 451	.759341E-01 461 .759341E-01 471	.759341E-01 531 .759341E-01 541	.801852E-03 1173 .801852E-03 1183	.801852E-03 3033 .801852E-03 3033	9
7 371 .759341E-01 7 381	.759341E-01 441 .759341E-01 451	.759341E-01 461 .759341E-01 471	.759341E-01 531 .759341E-01 541	.801852E-03 1173 .801852E-03 1183	.801852E-03 3033 .801852E-03 3033	9
7 371 .759341E-01 7 381 .759341E-01 7 391	.759341E-01 441 .759341E-01 451 .759341E-01	.759341E-01 461 .759341E-01 471 .759341E-01 481	.759341E-01 531 .759341E-01 541 .759341E-01 551	.801852E-03 1173 .801852E-03 1183 .801852E-03 1193	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033	.341300E
7 371 .759341E-01 7 381 .759341E-01 7 391	.759341E-01 441 .759341E-01 451 .759341E-01	.759341E-01 461 .759341E-01 471 .759341E-01 481	.759341E-01 531 .759341E-01 541 .759341E-01 551	.801852E-03 1173 .801852E-03 1183 .801852E-03 1193	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033	.341300E
7 371 .759341E-01 7 381 .759341E-01 7 391 .759341E-01 7 401	.759341E-01 441 .759341E-01 451 .759341E-01 461 .759341E-01 471	.759341E-01 461 .759341E-01 471 .759341E-01 481 .759341E-01 561	.759341E-01 531 .759341E-01 541 .759341E-01 551 .759341E-01 1203	.801852E-03 1173 .801852E-03 1183 .801852E-03 1193 .801852E-03 3011	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033	9 .341300E 9 .170650E
7 371 .759341E-01 7 381 .759341E-01 7 391 .759341E-01 7 401	.759341E-01 441 .759341E-01 451 .759341E-01 461 .759341E-01 471	.759341E-01 461 .759341E-01 471 .759341E-01 481 .759341E-01 561	.759341E-01 531 .759341E-01 541 .759341E-01 551 .759341E-01 1203	.801852E-03 1173 .801852E-03 1183 .801852E-03 1193 .801852E-03 3011	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033	9 .341300E 9 .170650E
7 371 .759341E-01 7 381 .759341E-01 7 391 .759341E-01 7 401	.759341E-01 441 .759341E-01 451 .759341E-01 461 .759341E-01 .759341E-01	.759341E-01 461 .759341E-01 471 .759341E-01 481 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 541 .759341E-01 551 .759341E-01 1203 .801852E-03 1213	.801852E-03 1173 .801852E-03 1183 .801852E-03 1193 .801852E-03 3011	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9 .341300E 9 .170650E 9 .341300E
7 371 .759341E-01 7 381 .759341E-01 7 391 .759341E-01 7 401	.759341E-01 441 .759341E-01 451 .759341E-01 461 .759341E-01 .759341E-01	.759341E-01 461 .759341E-01 471 .759341E-01 481 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 541 .759341E-01 .759341E-01 1203 .801852E-03 .801852E-03	.801852E-03 1173 .801852E-03 1183 .801852E-03 1193 .801852E-03 3011 .000000 3011 .208850E-01	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9 .341300E 9 .170650E 9 .341300E
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 411 .759341E-01 7 421	.759341E-01 441 .759341E-01 451 .759341E-01 461 .759341E-01 .759341E-01 .759341E-01	.759341E-01 461 .759341E-01 471 .759341E-01 561 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 551 .759341E-01 1203 .801852E-03 .801852E-03 .801852E-03	.801852E-03 1173 .801852E-03 1183 .801852E-03 3011 .000000 3011 .208850E-01 1223	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033	9.341300E 9.170650E 9.341300E 9.784990E
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 411 .759341E-01 7 421	.759341E-01 441 .759341E-01 451 .759341E-01 461 .759341E-01 .759341E-01 .759341E-01	.759341E-01 461 .759341E-01 471 .759341E-01 561 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 551 .759341E-01 1203 .801852E-03 .801852E-03 .801852E-03	.801852E-03 1173 .801852E-03 1183 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 411 .759341E-01 7 421 .759341E-01 7 421	.759341E-01 441 .759341E-01 451 .759341E-01 471 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 461 .759341E-01 471 .759341E-01 561 .759341E-01 .759341E-01 511 .759341E-01	.759341E-01 531 .759341E-01 551 .759341E-01 1203 .801852E-03 1213 .801852E-03 581 .759341E-01 591	.801852E-03 1173 .801852E-03 1183 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03 1233	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033	9.341300E 9.170650E 9.341300E 9.784990E 9
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 411 .759341E-01 7 421 .759341E-01 7 421	.759341E-01 441 .759341E-01 451 .759341E-01 471 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 461 .759341E-01 481 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 .759341E-01 .759341E-01 .203 .801852E-03 .801852E-03 .801852E-03 .801852E-03 .801852E-03	.801852E-03 1173 .801852E-03 1183 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03 1233 .801852E-03	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E 9
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 401 .759341E-01 7 421 .759341E-01 7 421 .759341E-01 7 431 .759341E-01 6 441	.759341E-01 441 .759341E-01 451 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 541 .759341E-01 1203 .801852E-03 1213 .801852E-03 581 .759341E-01 .759341E-01 .759341E-01	.801852E-03 1173 .801852E-03 1183 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03 1233 .801852E-03 1243	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E 9
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 401 .759341E-01 7 421 .759341E-01 7 421 .759341E-01 7 431 .759341E-01 6 441	.759341E-01 441 .759341E-01 451 .759341E-01 471 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .511 .759341E-01 .521 .759341E-01	.759341E-01 531 .759341E-01 551 .759341E-01 1203 .801852E-03 1213 .801852E-03 581 .759341E-01 591 .759341E-01 .601	.801852E-03 1173 .801852E-03 1183 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03 1233 .801852E-03 1243 .801852E-03	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E 9
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 411 .759341E-01 7 421 .759341E-01 7 431 .759341E-01 6 441 .759341E-01 6 451	.759341E-01 441 .759341E-01 451 .759341E-01 471 .759341E-01 501 .759341E-01 491 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 541 .759341E-01 .759341E-01 .203 .801852E-03 .801852E-03 .801852E-03 .81 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.801852E-03 1173 .801852E-03 1183 .801852E-03 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03 1233 .801852E-03 1243 .801852E-03	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E 9
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 401 .759341E-01 7 421 .759341E-01 7 431 .759341E-01 7 431 .759341E-01 6 441 .759341E-01 6 451 .759341E-01	.759341E-01 441 .759341E-01 451 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 541 .759341E-01 .759341E-01 .203 .801852E-03 .801852E-03 .801852E-03 .81 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.801852E-03 1173 .801852E-03 1183 .801852E-03 .801852E-03 .801852E-03 .1223 .801852E-03 .208850E-01 .223 .801852E-03 .2243 .801852E-03 .801852E-03	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E 9
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 411 .759341E-01 7 421 .759341E-01 7 431 .759341E-01 6 441 .759341E-01 6 451 .759341E-01 6 451 .759341E-01	.759341E-01 441 .759341E-01 451 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 551 .759341E-01 1203 .801852E-03 1213 .801852E-03 581 .759341E-01 591 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.801852E-03 1173 .801852E-03 1183 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03 1233 .801852E-03 1243 .801852E-03 1253 .801852E-03	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E 9
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 411 .759341E-01 7 421 .759341E-01 7 431 .759341E-01 6 451 .759341E-01 6 451 .759341E-01 6 451 .759341E-01 .759341E-01 .759341E-01	.759341E-01 441 .759341E-01 451 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 551 .759341E-01 1203 .801852E-03 1213 .801852E-03 581 .759341E-01 591 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.801852E-03 1173 .801852E-03 1183 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03 1233 .801852E-03 1243 .801852E-03 1253 .801852E-03 .801852E-03	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E 9.341300E
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 421 .759341E-01 7 421 .759341E-01 6 441 .759341E-01 6 451 .759341E-01 6 451 .759341E-01 6 461 .759341E-01 6 461 .759341E-01 6 461 .759341E-01 6 461 .759341E-01 6 461 .759341E-01 6 461	.759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 .759341E-01 .759341E-01 .203 .801852E-03 .213 .801852E-03 .801852E-03 .801852E-03 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.801852E-03 1173 .801852E-03 1183 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03 1233 .801852E-03 1243 .801852E-03 1253 .801852E-03 1263 .801852E-03	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E 9
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 411 .759341E-01 7 421 .759341E-01 6 441 .759341E-01 6 441 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 441 .759341E-01 451 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 .759341E-01 .759341E-01 .203 .801852E-03 .801852E-03 .801852E-03 .81 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.801852E-03 1173 .801852E-03 1183 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03 1233 .801852E-03 1243 .801852E-03 1253 .801852E-03 1253 .801852E-03 1263 .801852E-03	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E 9
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 401 .759341E-01 7 421 .759341E-01 7 431 .759341E-01 6 441 .759341E-01 6 451 .759341E-01 6 461 .759341E-01 6 461 .759341E-01 6 461 .759341E-01 6 461 .759341E-01 6 461 .759341E-01 6 461 .759341E-01 6 461 .759341E-01 6 461 .759341E-01 6 461 .759341E-01	.759341E-01 441 .759341E-01 451 .759341E-01	.759341E-01 461 .759341E-01 471 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 541 .759341E-01 1203 .801852E-03 1213 .801852E-03 581 .759341E-01 601 .759341E-01 611 .759341E-01 621 .759341E-01 631 .759341E-01 1283	.801852E-03 1173 .801852E-03 1183 .801852E-03 1193 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03 1243 .801852E-03 1253 .801852E-03 1263 .801852E-03 1263 .801852E-03 1273 .801852E-03 3011	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E 9
7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 421 .759341E-01 7 421 .759341E-01 7 431 .759341E-01 6 441 .759341E-01 6 451 .759341E-01 6 461 .759341E-01 6 471 .759341E-01 6 471 .759341E-01 6 481 .759341E-01	.759341E-01 441 .759341E-01 451 .759341E-01	.759341E-01 461 .759341E-01 471 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .521 .759341E-01 .541 .759341E-01 .551 .759341E-01 .759341E-01 .759341E-01 .759341E-01 .759341E-01	.759341E-01 531 .759341E-01 541 .759341E-01 1203 .801852E-03 1213 .801852E-03 581 .759341E-01 601 .759341E-01 611 .759341E-01 621 .759341E-01 631 .759341E-01 1283 .801852E-03	.801852E-03 1173 .801852E-03 1183 .801852E-03 3011 .000000 3011 .208850E-01 1223 .801852E-03 1233 .801852E-03 1243 .801852E-03 1253 .801852E-03 1263 .801852E-03 1273 .801852E-03 1273 .801852E-03	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.784990E 9
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7 371 .759341E-01 7 381 .759341E-01 7 401 .759341E-01 7 411 .759341E-01 7 421 .759341E-01 7 431 .759341E-01 6 451 .759341E-01 6 451 .759341E-01 6 471 .759341E-01 6 471 .759341E-01 6 471 .759341E-01 6 481 .759341E-01 6 471 .759341E-01 7 491	.759341E-01 441 .759341E-01 451 .759341E-01 471 .759341E-01 501 .759341E-01	.759341E-01 461 .759341E-01 471 .759341E-01 561 .759341E-01 571 .759341E-01 511 .759341E-01 521 .759341E-01 531 .759341E-01 541 .759341E-01 551 .759341E-01 651	.759341E-01 531 .759341E-01 541 .759341E-01 1203 .801852E-03 581 .759341E-01 591 .759341E-01 601 .759341E-01 611 .759341E-01 621 .759341E-01 621 .759341E-01 621 .759341E-01 623 .759341E-01 1283 .801852E-03	.801852E-03 1173 .801852E-03 1183 .801852E-03 .801852E-03 .801852E-03 .208850E-01 1223 .801852E-03 .233 .801852E-03 .243 .801852E-03 .253 .801852E-03 .263 .801852E-03 .273 .801852E-03 .273 .801852E-03	.801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03 3033 .801852E-03	9.341300E 9.170650E 9.341300E 9.341300E 9.341300E 9.853250E

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7 183	821	891	911	981	3023	9
.801852E-03			.759341E-01	.759341E-01	.801852E-03	.238910E
7 193	831	901	921	991	3023	9 .170650E
.801852E-03	.759341E-01 841	.759341E-01 911	.759341E-01 931	1001	3023	.170636E
6 203 .801852E-03	759341E-01	.759341E-01	.759341E-01			
6 213	851	921	941	1011	3023	
.801852E-03	.759341E-01	.759341E-01	.759341E-01		.801852E-03	_
7 223	861	931	951	1021	3023	9
.801852E-03	.759341E-01			.759341E-01	.801852E-03	.238910
7 233	871	941	961	1031	3023	307170
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7 283 .801852E-03	921 .759341E-01					.341300
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6 323 .801852E-03	.759341E-01		.759341E-01			
6 333	971	1061	1131	3011	3023	
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6 343	981	1051	1071	1141	3023	
.801852E-03			.759341E-01		3023	
6 353	991	1061	1081 .759341E-01			
.801852E-03 7 363	1001	1071	1091	1161	3023	9
.801852E-03		.759341E-01			.801852E-03	.409560
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6 443	1081	1151	1171	1241	3023	
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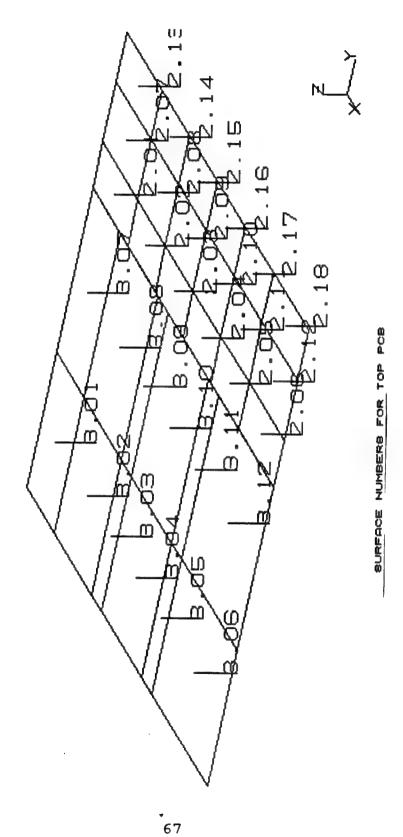
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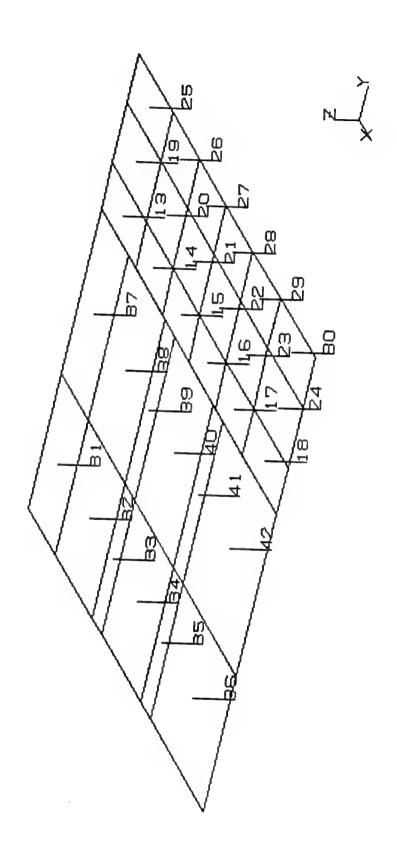
APPENDIX E. HEAT DISSIPATIONS BY NODE

NODE	WATTS	NODE	WATTS	NODE	WATTS	NODE	WATT
6	.003	25	.02	49	.023	102	.018
7	.002	26	.041	50	.010	103	.036
8	.003	27	.020	51	.025	108	.120
9	.020	28	.030	57	.003	109	.030
10	.041	30	.001	58	.023	110	.018
11	.011	31	.003	82	.060	111	.018
12	.016	33	.001	83	.053	113	.019
13	.002	34	.006	86	.090	114	.019
14	.002	35	.014	87	.125	115	.019
15	.005	36	.008	89	.003	117	.010
16	.006	37	.050	90	.007	118	.015
17	.005	39	.003	91	.005	119	.025
18	.006	40	.001	94	.070	122	.025
19	.004	41	.023	95	.090	125	.010
20	.004	42	.046	97	.007	126	.015
21	.002	45	.002	98	.015	127	.025
22	.004	46	.001	99	.007	133	.010
23	.004	47	.005	100	.100	134	.015
24	.009	48	.001	101	.018	135	.025

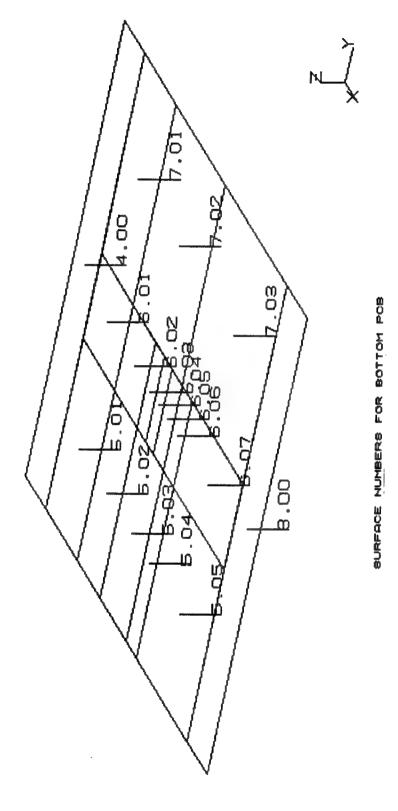
PCB HEAT DISSIPATIONS BY NODE

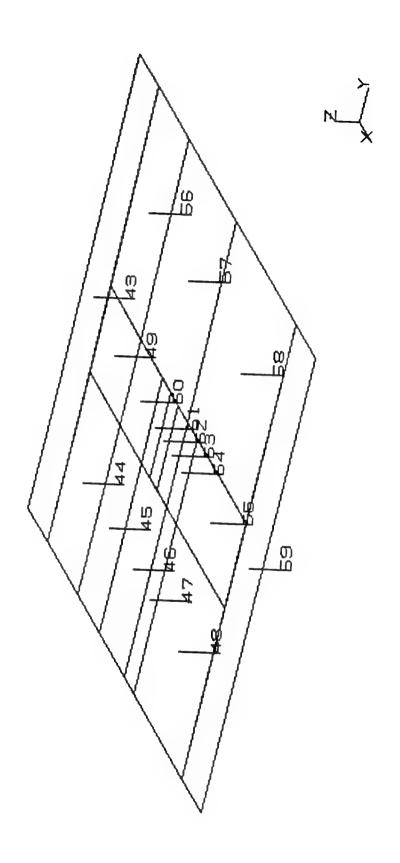
## APPENDIX F. SURFACE/NODE NUMBERS FOR TOP PCB





# APPENDIX G. SURFACE/NODE NUMBERS FOR BOTTOM PCB





### APPENDIX H. OPTICAL PROPERTY DATA FOR EPS

```
PqDn PqUp Home End
                                                                  F2Help
eeë Ctrl: Copy (See F2)ee ITAS Property Data Entry eeeeeeeeeeeeeeeeeeeeeeeeeeeeee
m Seq Surface No NodeNo Alpha Emiss T/Mass Dissip MID Comments
                                                      EPS HOUSING
1.01
                1
                       . 4
                             .79
                                    1.
                                           0.
    2 1.02
                             .79
                                           0.
                                                      EPS HOUSING
                                    1.
Þ
                                                      EPS HOUSING
B 1.03
                3
                       . 4
                             .79
                                    1.
                                           0.
    4 1.04
                       . 4
                             .79
                                    1.
                                           0.
                                                      EPS HOUSING
EPS HOUSING
                             .79
                                          0.
5 1.05
                5
                       . 4
                                    l.
    6 1.06
                             .79
                                    1.
                                           0.
                                                     EPS HOUSING
                             .79
                                          0.
                                                     EPS HOUSING
                       . 4
                7
п
   7 1.07
                                    1.
                             .79
                В
                                    1.
                                           0.
                                                     EPS HOUSING
Б
    8 1.08
                                                                           E
                             .79
                                          0.
                                                     EPS HOUSING
                9
   9 1.09
. 4
                                    1.
                             .79
  10 1.10
                10
                                          0.
                                                     EPS HOUSING
                                    1.
               11
                      . 4
                             .79
                                    1.
                                          0.
                                                     EPS HOUSING
  11 1.11
D
                                                     EPS HOUSING
п
  12 1.12
                12
                       . 4
                             .79
                                    1.
                                          0.
                                                     PRINTED CIRCUIT 1
  13 2.01
                13
                      0.
                             .01
                                    l.
                                          0.
                             .01
                14
                      0.
                                          0.
                                                      PRINTED CIRCUIT 1
В
  14 2.02
                                    1.
  15 2.03
                15
                       0.
                             .01
                                    1.
                                          0.
                                                      PRINTED CIRCUIT
0.
                             .01
                                          0.
                                                      PRINTED CIRCUIT 1
  16 2.04
                16
                                    1.
17 2.05
                17
                      0.
                             .01
                                    1.
                                          0.
                                                      PRINTED CIRCUIT 1
  18 2.06
                18
                      0.
                             .01
                                    1.
                                          0.
                                                      PRINTED CIRCUIT
S-F1Load/Save All
                          S-F4Auto TM
                                        UDC Allowed
  Fiload/Save Page F3PropLib F4AutoGen F5ImportPropFmt F6NewPropFile F10Search
PgDn PgUp Home End
                                                                  F2Help
èëë Ctrl : Copy (See F2)ëë ITAS Property Data Entry ëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëë
E Seq Surface No NodeNo Alpha Emiss T/Mass Dissip MID Comments
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  35 3.05
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  36 3.06
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S-F4Auto TM
                                        UDC Allowed
S-F1Load/Save All
  Fiload/Save Page F3PropLib F4AutoGen F5ImportPropFmt F6NewPropFile F10Search
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F2Help
PqDn PgUp Home End
éëë Ctrl: Copy (See F2)ëë ITAS Property Data Entry ëëëëëëëëëëëëëëëëëëëëëëëëëëëëëë
n Seq Surface No NodeNo Alpha Emiss T/Mass Dissip MID Comments
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47 5.04
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51 6.03
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S-FiLoad/Save All S-F4Auto TM UDC Allowed
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  F1Load/Save Page F3PropLib F4AutoGen F5ImportPropFmt F6NewPropFile F10Search
PgDn PgUp Home End
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  53 6.05
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  54 6.06
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                             .01
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PRINTED CIRCUIT 2
  55 6.07
                55
                      0.
                             .01
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56 7.01
                                                       PRINTED CIRCUIT 2
  57 7.02
                                                       PRINTED CIRCUIT 2
                57
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                58 0.
59 0.
  58 7.03
                              .01
                                                       PRINTED CIRCUIT 2
  59 8.00
                              .01
                                                       PRINTED CIRCUIT 2
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S-F1Load/Save All S-F4Auto TM UDC Allowed ESCQuit
F1Load/Save Page F3PropLib F4AutoGen F5ImportPropFmt F6NewPropFile F10Search

# APPENDIX I. THERMAL MASS FOR THE EPS

								_		
					kg/cubic m	cal/kg c			cubic meters	W
NODE	XY	Y	Z	thickness	ro(Cu/Al/poly)	specific heat	CONV. FACTO	RINTOM	VOLUME	MASS
	01	9.4	1.569	0.2	2787	0.199	69.			
	02	2.1	1.569	0.2	2787	0.199	69.	78 61024		
9	03	2.1	1.569	0.2	2787	0.199	69.			
9	04	2.1	1.569	0.2	2787	0.199	69.	78 61024	1.07987E-05	
9	05	2.1	1.569	0.2	2787	0.199	69.	78 61024	1.07987E-05	or manager with
9	06	9.4	8.4	0.2	2787	0.199	69.	78 61024	0.000258783	
9	07	94	1.569	0.2	2787	0.199	69.	78 61024	4.8337E-05	
	80	2.1	1.569	0.2	2787	0.199	69.	78 61024	1.07987E-05	
	09	2.1	1.569	0.2	2787	0.199	69.	78 61024	1.07987E-05	
9	10	2.1	1.569	0.2	2787	0.199	69.	78 61024	1.07987E-05	
	11	2.1	1.569	0.2	2787	0.199	69.	78 61024	1.07987E-05	
	12	9.4	8.4	0.2	2787	0.199	69.	78 61024		
-9		9 4	8.4	0.125	2787	0.199	69	78 61024	0 00016174	6.25946
9	21	8.4	0.25	0.2	2787	0.199	69.	78 61024	6.88254E-06	
9	22	8 4	0.375	0.2	2787	0.199	69.	78 61024	1.03238E-05	
9	23	8.4	0.199	0.2	2787	0.199	69.	78 61024		
9	24	8.4	2.5	0.2	2787	0.199	69.	78 61024	6.88254E-05	
9	25	8.4	0.375	0.2	2787	0.199	69.	78 61024	1.03238E-05	
9:	26	8 4	0.199	0.2	2787	0.199	69.	78 61024		
6	01	1.375	2.375	0.00134	8666	0.098	69.	78 61024	7.17085E-08	
6	02	1.875	2.375	0.00134	8566	0.098	69.	78 61024		
6	03	0.5	2.375	0.00134	8666	0.098	69.	78 61024	2.60758E-08	0.00154
6	04	2	2.375	0.00134	8666	0.098	69	78 61024		
6	05	0.5	2.375	0.00134	<b>866</b> 6	0.098	69.	78 61024	2.60758E-08	
	06	2.75	2.375	0.00134	<b>866</b> 6	0.098	69.	78 61024	1.43417E-07	
	07	1.375	2.875	0.00134	8566	0.098	69.	78 61024	8.6805E-08	
6	80	1.875	2.875	0.00134	<b>86</b> 66	0.098	69.	78 61024	1.1837E-07	0.00701
6	09	0.5	2.875	0.00134	8666	0.098	69	78 61024	3.15654E-08	
6	10	2	2.875	0.00134	<b>86</b> 66	0.098	69.	78 61024	1.26262E-07	0.00748
	11	0.5	2.875	0.00134	8666	0.098	69	78 61024	3.15654E-08	0.0018
	12	2.75	2.875	0.00134	8666	0.098	69	78 61024	1.7361E-07	0.01028
	13	1.75	0.8125		8666	0.098	69	78 61024	3.12223E-08	0.0018

614	1.375	0.8125	0.00134	9998	0.098	82.69	61024	2.45318E-08	0.001454
615	1.375	0.8125	0.00134	8666	0.098	69.78	61024	2.45318E-08	0.001454
616	1.375	0.8125	0.00134	8666	0.098	82.69	61024	2.45318E-08	0.001454
617	1.375	0.8125	0.00134	8666	0.098	69.78	61024	2.45318E-08	0.001454
618	1.75	0.8125	0.00134	8666	0.098	69.78	61024	3.12223E-08	0.00185
619	1.75	1.0625	0.00134	8666	0.098	69.78	61024	4.08292E-08	0.00242
620	1.375	1.0625	0.00134	9998	0.098	69.78	61024	3.20801E-08	0.001901
621	1.375	1.0625	0.00134	9998	0.098	69.78	61024	3.20801E-08	0.001901
622	1.375	1.0625	0.00134	8666	0.098	69.78	61024	3.20801E-08	0.001901
623	1.375	1.0625	0.00134	8666	0.098	69.78	61024	3.20801E-08	0.001901
624	1.75	1.0625	0.00134	9998	0.098	82.69	61024	4.08292E-08	0.00242
625	1.375	0.875	0.00134	9998	0.098	69.78	61024	2.64189E-08	0.001566
626	1.375	0.875	0.00134	8666	0.098	69.78	61024	2.64189E-08	0.001566
627	1.375	0.875	0.00134	8666	860.0	69.78	61024	2.64189E-08	0.001566
628	1.375	0.875	0.00134	8666	0.098	69.78	61024	2.64189E-08	0.001566
629	1.375	0.875	0.00134	8666	0.098	69.78	61024	2.64189E-08	0.001566
630	1.75	0.875	0.00134	8666	0.098	69.78	61024	3.36241E-08	0.001993
1601	8	-	0.00134	8666	0.098	69.78	61024	1.75669E-07	0.01041
1602	8	1.563	0.00134	8666	0.098	69.78	61024	1.02964E-07	0.006102
1603	8	1.125	0.00134	8666	0.098	82.69	61024	7.41102E-08	0.004392
1604	8	1.3125	0.00134	9998	0.098	82.69	61024	8.64619E-08	0.005124
1605	8	0.5	0.00134	8666	0.098	69.78	61024	3.29379E-08	0.001952
9091	8	2.5	0.00134	8666	0.098	69.78	61024	1.64689E-07	0.00976
1607	1.5	1.563	0.00134	8666	0.098	69.78	61024	5.14819E-08	0.003051
1638	1.5	1.125	0.00134	8666	0.098	69.78	61024	3.70551E-08	0.002196
1609	1.5	1.4375	0.00134	8666	0.098	69.78	61024	4.73482E-08	0.002806
1610	1.5	0.375	0.00134	8666	0.098	69.78	61024	1.23517E-08	0.000732
1611	1.5	0.5	0.00134	8666	0.098	69.78	61024	1.64689E-08	0.000976
1612	1.5	0.5	0.00134	9998	0.098	82.69	61024	1.64689E-08	0.000976
1613	1.5	2.5	0.00134	8666	0.098	69.78	61024	8.23447E-08	0.00488
1614	3.5	1.563	0.00134	8666	0.098	69.78	61024	1.20124E-07	0.007119
1615	3.5	2.4375	0.00134	8666	0.098	69.78	61024	1.87334E-07	0.011102
1616	3.5	8	0.00134	9998	0.098	82.69	61024	2.30565E-07	0.013664
1617	3.5	-	0.00134	8666	0.098	82.69	61024	7.6855E-08	0.004555
501	1.375	2.375	0.01933	1950	0.31	82.69	61024	1.03442E-06	0.043634
505	1.875	2.375	0.01933	1950	0.31	82.69	61024	1.41057E-06	0.05950
	40	2775	0.01033	1050	0.31	60 7g	61024	2 76152E 07	0.015067

504	2	2.375	0.01933	1950	0.31	82.69	61024	1.50461E-06	0.063468
505	0.5	2.375	0.01933	1950	0.31	69.78	61024	3.76153E-07	0.015867
506	2.75	2.375	0.01933	1950	0.31	82.69	61024	2.06884E-06	0.087268
507	1.375	2.875	0.01933	1950	0.31	82.69	61024	1.25219E-06	0.05282
508	1.875	2.875	0.01933	1950	0.31	69.78	61024	1.70754E-06	0.072027
509	0.5	2.875	0.01933	1950	0.31	69.78	61024	4.55343E-07	0.019207
510	2	2.875	0.01933	1950	0.31	82.69	61024	1.82137E-06	0.076829
511	0.5	2.875	0.01933	1950	0.31	69.78	61024	4.55343E-07	0.019207
512	2.75	2.875	0.01933	1950	0.31	69.78	61024	2.50439E-06	0.10564
513	1.75	0.8125	0.01933	1950	0.31	69.78	61024	4.50394E-07	0.018999
514	1.375	0.8125	0.01933	1950	0.31	69.78	61024	3.53881E-07	0.014927
515	1.375	0.8125	0.01933	1950	0.31	69.78	61024	3.53881E-07	0.014927
516	1.375	0.8125	0.01933	1950	0.31	69.78	61024	3.53881E-07	0.014927
517	1.375	0.8125	0.01933	1950	0.31	82.69	61024	3.53881E-07	0.014927
518	1.75	0.8125	0.01933	1950	0.31	82.69	61024	4.50394E-07	0.018999
519	1.75	1.0625	0.01933	1950	0.31	69.78	61024	5.88977E-07	0.024844
520	1.375	1.0625	0.01933	1950	0.31	69.78	61024	4.62767E-07	0.01952
521	1.375	1.0625	0.01933	1950	0.31	82.69	61024	4.62767E-07	0.01952
522	1.375	1.0625	0.01933	1950	0.31	69.78	61024	4.62767E-07	0.01952
523	1.375	1.0625	0.01933	1950	0.31	69.78	61024	4.62767E-07	0.01952
524	1.75	1.0625	0.01933	1950	0.31	82.69	61024	5.88977E-07	0.024844
525	1.375	0.875	0.01933	1950	0.31	69.78	61024		0.016076
526	1.375	0.875	0.01933	1950	0.31	82.69	61024	3.81103E-07	0.016076
527	1.375		0.01933	1950	0.31	82.69	61024	3.81103E-07	0.016076
528	1.375	0.875	0.01933	1950	0.31	69.78	61024	3.81103E-07	0.016076
529	1.375		0.01933	1950	0.31	69.78	61024	က	0.016076
530	1.75		0.01933	1950	0.31	82.69	61024	4.8504E-07	0.02046
1501	8		0.01933	1950	0.31	69.78	61024	2	0.106893
1502	3	1.563	0.01933	1950	0.31	82.69	61024	1.48529E-06	0.062653
1503	3	1.125	0.01933	1950	0.31	69.78	61024	<b></b>	
1504	3	1.3125	0.01933	1950	0.31	69.78	61024		0.05261
1505	က	0.5	0.01933	1950	0.31	69.78	61024	4.75141E-07	0.020042
1506	3	2.5	0.01933	1950	0.31	69.78	61024		
1507	1.5	1.563	0.01933	1950	0.31	82.69	61024	7.42645E-07	-
1508	1.5	1.125	0.01933	1950	0.31	82.69	61024	S	_
1509	7.1	1.4375	0.01933	1950	0.31	82.69	61024	9	0
47.40	4	0.375	0.01933	1950	0.31	69.78	61024	1.78178E-07	0.007516

	Addra									
						cal/kg C	kg/cubic m	kg/cubic m CONV. FACTOR cubic in to THERIMAL	cubic in to	THERMAL
NODE	# OF PINS	Ē	RADIUS	HEIGHT	VOLUME	U	2	i ,	cubic m	MASS
N	2011 6	3.14159	0.0165	0.01933	9.92E-05	0.11	8378	. 69.78	61024	0.000105
N	012 6		0.0165	0.00134	6.88E-06	0.11	8378	82.69	61024	7.25E-06
2			0.0165	0.01933	0.00038	0.11	8378	82.69	61024	0.000401
Ñ	2022 23		0.0165	0.00134	2.64E-05	0.11	8378	69.78	61024	2.78E-05
Ñ	2031 4	3.14159	0.0165	0.01933	6.61E-05	0.11	8378	82.69	61024	6.97E-05
Ñ	2032 4	3.14159	0.0165	0.00134	4.58E-06	0.11	8378	82.69	61024	4.83E-06
ณ <u>ี</u>	2041 25		0.0165	0.01933	0.000413	0.11	8378	82.69	61024	0.000436
Ñ	2042 25		0.0165	0.00134	2.87E-05	0.11	8378	82.69	61024	3.02E-05
Ñ	3 3	3 3.14159	0.0165	0.01933	4.96E-05	0.11	8378	82.69	61024	5.23E-05
Ñ			0.0165	0.00134	3.44E-06	0.11	8378	69.78	61024	3.62E-06
2	2121 12	3.14159	0.0165	0.01933	0.000198	0.11	8378	69.78	61024	0.000209
2		3.14159	0.0165	0.00134	1.38E-05	0.11	8378	69.78	61024	1.45E-05
2	2131 8	3 3.14159	0.0165	0.01933	0.000132	0.11	8378	69.78	61024	0.000139
2	132 8		0.0165	0.00134	9.17E-06	0.11	8378	69.78	61024	9.66E-06
2	191	3.14159	0.0165	0.01933	0.000231	0.11	8378	82.69	61024	0.000244
2	2192 14	3.14159	0.0165	0.00134	1.6E-05	0.11	8378	69.78	61024	1.69E-05
ñ	3011 64	3.14159	0.0165	0.01933	0.001058	0.11	8378	69.78	61024	0.001115
ñ		1 3.14159	0.0165	0.00134	7.34E-05	0.11	8378	69.78	61024	7.73E-05
ñ	3021 34		0.0165	0.01933	0.000562	0.11	8378	82.69	61024	0.000592
ñ		3.14159	0.0165	0.00134	3.9E-05	0.11	8378	69.78	61024	4.11E-05
ñ	3031 32	3.14159	0.0165	0.01933	0.000529	0.11	8378	82.69	61024	0.000558
ñ		3.14159	0.0165	0.00134	3.67E-05	0.11	8378	82.69	61024	3.86E-05
ନ	3051 28		0.0165	0.01933	0.000463	0.11	8378	87.69	61024	0.000488
ñ	3052 28	3.14159	0.0165	0.00134	3.21E-05	0.11	8378	82.69	61024	3.38E-05
က	3141 10	3.14159	0.0165	0.01933	0.000165	0.11	8378	82.69	61024	0.000174
8	3142 10	3.14159	0.0165	0.00134	1.15E-05	0.11	8378	82.69	61024	1.21E-05
8	3151 100	3.14159	0.0165	0.01933	0.001653	0.11	8378	82.69	61024	0.001742
8	3152 100	3.14159	0.0165	0.00134	0.000115	0.11	8378	82.69	61024	0.000121
8	3161 114	3,14159	0.0165	0.01933	0.001885	0.11	8378	87.69	61024	0.001986
3	3162 114	3 14159	0.0165	0.00134	0.000121	-	0220	000		00,000

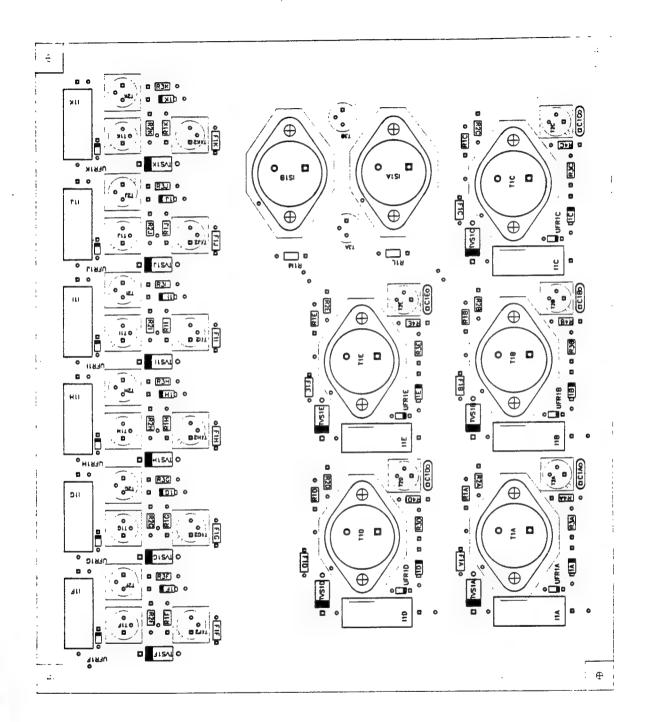
## APPENDIX J. EPS PCB BOARD DATA

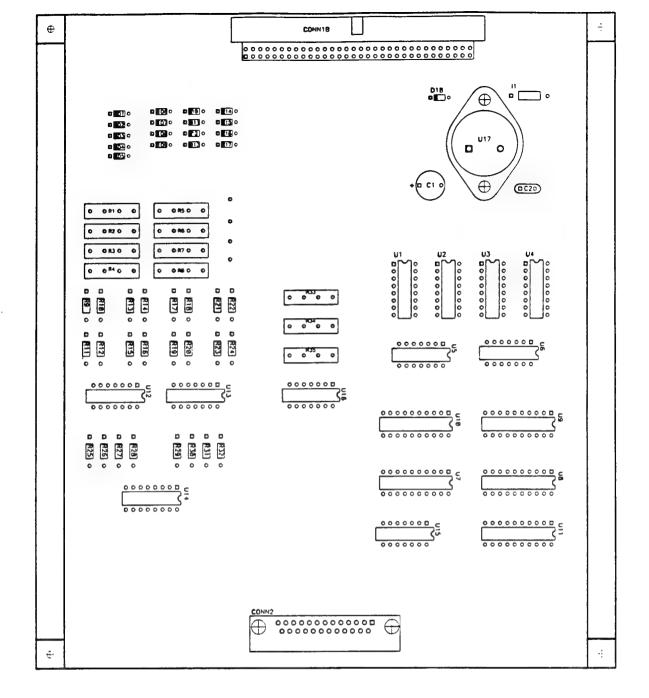
ssister	11A DCSA Power Switch	•	Dissipation, Bus =	Dissipation, Bus =
or ter Resister or	DCSA Power Switch		13v Journey	IZV (ECIIDSE)
or Resister Or	98	100	0.039	0.061
ter Resister Or		9		
ler Resister Or	=	0-		
Resister Resister		0~		
Resister or		100	0.002	0.001
Resister	II)	100	00000	
oltage Suppressor Recovery Diode Bi-Directional		100		0.003
Ottage Suppressor Recovery Diode	100	100		
		100		
		100	700.0	
	topico acond	1007		
	î	3	0.039	Leo.u
		0~		
	99-	0~		
	*	<u>-</u>		
	44	100	0.002	0.001
PMOSFET Gate Bias Resister R2B	88	100	0.000	0000
Gate Protection Resister	48	100	0.003	
	84	100	9000	0.009
NMOSFET T2B		100	0.000	000'0
Pico Fuse	54	100	200.0	0.011
	RF Power Switch - Rx only	70	0.010	0.015
Transient Voltage Suppressor TVS1C	=	9		
Ultra Fast Recovery Diode UFR1C	•	9		
		9		
PMOSFET Gate Bias Resister R1C	•	100	0.002	0.001
PMOSFET Gate Bias Resister R2C	10	100	0000	
NMOSFET Gate Protection Resister R3C	88	70		0.003
PMOSFET T1C	48	70		
NMOSFET T2C	36	70		
Pico Fuse F1C	86	70		
	RF Power Switch - Rx and Tx	30	0.088	0.138
Sor	**	9		
de	25	<b>0</b> ~		
	10	0~		
PMOSFET Gate Bias Resister R1C	19	30	0.002	0.001

	Designator	Designator   Subcircuit	Duty cycle Power	Power	Power	X-Coord   Y-Coord	Y-Coord	
				Dissipation, Bus =	Dissipation, Bus =			
PMOSFET Gate Bias Resister	R2C	=	30	0000 0.000	12V (ECHPSe)			i.
NMOSFET Gate Protection Resister R3C	r R3C		30	0.003	3 0.003			
PMOSFET	T1C		30	0.014	1 0.021			
NMOSFET	T2C		30	00.0	0000			
Pico Fuse	F1C	2.5	30	0.016				
Inductor	110	CHARG Battery A Power Switch	09	0.012	N/A	4.300	8.900	
Transient Voltage Suppressor	TVS1D	6	0~		**	5.025	8.637	
Ultra Fast Recovery Diode	UFR1D	=	9		=	3.925		
12v Zener Bi-Directional	010		0~		=	3.750	8.125	
PMOSFET Gate Bias Resister	R1D	8	09	0.002		5.125		
PMOSFET Gate Bias Resister	R2D	11	09	0.000	*	4.950	7.075	
NMOSFET Gate Protection Resister			9	0.003	3 0.003	3.750	7.575	
PMOSFET	T10		09	0.008	=	4.475	7.850	
NMOSFET	T2D	8	09	0.000		3.875	7.000	
Pico Fuse	F10	66	9	0.002		5.250	8.175	
Inductor	11E	CHARG Battery B Power Switch	90	0.050	N/A	4.300		
Trånsient Voltage Suppressor	TVS1E	a .	~0			5.025		
Ultra Fast Recovery Diode	UFR1E	88	~0		99	3.925		
12v Zener Bi-Directional	D1E	88	0~		96	3.750	5.700	
PMOSFET Gate Bias Resister	R1E		09	0.002		5.125		
PMOSFET Gate Bias Resister	R2E	*	09	0.000	:	4.950	4.650	
NMOSFET Gate Protection Resister	r R3E	8	09			3.750		
PMOSFET	T1E	40	09		:	4.475		
NMOSFET	T2E		09			3.875		
Pico Fuse	F1E	*	09	0.050		5.250	5.650	
Inductor	11F	MUXA	30	900.0	600.0	8.400	8.875	
Transient Voltage Suppressor	TVS1F	=	0~			7.297	9.450	
Ultra Fast Recovery Diode	UFR1F	\$6	0~			8.125	9.225	
12v Zener Bi-Directional	D1F	41	9			7.175	8.550	
PMOSFET Gate Bias Resister	R1F	=	30	0.002	0.001	7.175	8.950	
PMOSFET Gate Bias Resister	R2F		30					
NMOSFET Gate Protection Resister R3F	r R3F	•	30					
PMOSFET	T1F	**	30					
PMOSFET	T1F2	*	30			j		
NMOSFET	T2F		30		0.000			
Pico Fuse	F1F	=	100	0.001		6.475	9.125	

	Designator Subcircuit	beireuit	Duty cycle Power	Power		A-Coord 1-coord		
Component				Dissipation, Bus = 15V (Sunfit)	Dissipation, Bus = 12V (Eclipse)			
		MINO	30	900'0	600.0	8.400	7.525	
	16	a VOW				7.297	8.100	
Transient Voltage Suppressor	TVS1G					8.125	7.875	
Je	UFR1G		9 0			7.175	7.200	
	D1G		0~	COOO	0 001	7 175	7,600	
esister	R1G		30				7 600	
	R2G	8	30			7 225	7 025	
MACCELT Cate Protection Resister R3G	R3G	=	30				7 700	
NMOSFET Gate Tible and Tropics	T16	0.0	30				7.700	
	T402	100	30				00/./	
	1102	4.6	30	0000			7.100	
NMOSFET	126	=	100		0.003	6.475	7.775	
Pico Fuse	F1G							
			30	0000	0.002	8.400	6.175	
Inductor	TH.	MASSA					6.750	
Transient Voltage Suppressor	TVS1H	14	?			8 125	6 525	
Litra Cast Recovery Diode	UFR1H	*	0~			7 175	7. BEO	
42. 7 - 10 Directional	D1H	3	<b>?</b>			1 175	0000	
LAV Zellet Di-Dilectorial	D1H		30				0.230	
PMOSFEI Gate Blas Resister		00	30				6.250	
PMOSFET Gate Blas Resister		86	30	0.003			5.675	
NMOSFET Gate Protection Resister	רכאן	68	30		1 0.001		6.350	
PMOSFET	H	44	30		10001		6.350	
PMOSFET	T1H2		30			7.775	5.750	
NMOSFET	TZH	60	2004		0000	6.475	6.425	
Pico Fuse	F1H		2					
				30	0.002	8.400	4.825	
Inductor		MASSB				_	5.400	
Transient Voltage Suppressor	TVS1I		0			8.125		
Ultra Fast Recovery Diode	UFR11	:				7.175	4.500	
12v Zener Bi-Directional	011	•		200 0	0.001		4.900	
PMOSFET Gate Bias Resister	R11	3	, (				4.900	
PMOSFET Gate Bias Resister	RZI	2				3 7.225		
NMOSFET Gate Protection Resister R3	er R3l	THE RESERVE THE PROPERTY OF TH					5.000	
PMOSFET	111	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
PMOSFET	T112			30			4.400	
NMOSFET	121							
Pico Fuse	F11		1	0.0				
		A I INDICE	~			8.400		
Inductor	17.7	I RICALE A				7.297	4.050	
Transient Voltage Suppressor	TVS1J		2					

Ultra Fast Recovery Diode  12v Zener Bi-Directional PMOSFET Gate Bias Resister PMOSFET Gate Bias Resister R2J NMOSFET Gate Protection Resister R3J PMOSFET PMOSFET NMOSFET I1J PMOSFET ITJ INK Inductor I		Dissip 15V (S	ation, Bus =	Dissipation, Bus =			
Itra Fast Recovery Diode         UFR1J           2v Zener Bi-Directional         D1J           MOSFET Gate Bias Resister         R1J           MOSFET Gate Bias Resister         R2J           IMOSFET Gate Protection Resister         R3J           IMOSFET Gate Protection Resister         T1J           IMOSFET Gate Bias Resister         T2J           IMOSFET T1J         T2J           Inductor         T1K           Inductor         TVS1K           I			15V (Sunlit)	TZV (ECHDSe)			
2v Zener Bi-Directional         D1J           MOSFET Gate Bias Resister         R1J           MOSFET Gate Bias Resister         R2J           IMOSFET         T1J           IMOSFET         T1J           IMOSFET         T2J           IMOSFET         T2J           IMOSFET         T2J           Ico Fuse         F1J           Iductor         TVS1K           Itransient Voltage Suppressor         TVS1K           Itransient Voltage Suppressor         TVS1K           Itransient Voltage Suppressor         TVS1K           Image: Interctional Suppressor         TVS1K           Image: Interctional Suppressor         TVS1K           Image: Interctional Suppressor         Interctional Suppressor           Interctional Suppressor         Interctional Su					8.125	3.825	
MOSFET Gate Bias Resister         R1J           MOSFET Gate Bias Resister         R2J           MOSFET Gate Protection Resister R3J         T1J           MOSFET         T1JZ           MOSFET         T2J           IMOSFET         T2J           Ico Fuse         F1J           Iductor         TVS1K           Iductor         TVS1K           Itransient Voltage Suppressor         TVS1K           Iffar Fast Recovery Diode         UFR1K           2v Zener Bi-Directional         D1K           MOSFET Gate Bias Resister         R1K           MOSFET Gate Bias Resister         R2K		0			7.175	3.150	
MOSFET Gate Bias Resister         R2J           MOSFET Gate Protection Resister R3J         T1J           MOSFET         T1JZ           MOSFET         T2J           IMOSFET         F1J           Ico Fuse         F1J           Ico Fuse         F1J           Ico Fuse         F1J           Iductor         TVS1K           Inductor         INK           Inductor         INK           Inductor         INK           Inductor         INK           Inductor         INK           Inductor         Intension           Intension         Intension           Intension         Intension           Intension         Intension           Intension         Intension           Intension         Intension           Intension         Intension		0			7.175	3.550	
MOSFET Gate Protection Resister R3J           MOSFET         T1J           MOSFET         T1J2           IMOSFET         T2J           ico Fuse         F1J           ransient Voltage Suppressor         TVS1K           ransient Voltage Suppressor         TVS1K           Ilfra Fast Recovery Diode         UFR1K           2v Zener Bi-Directional         D1K           MOSFET Gate Bias Resister         R1K           MOSFET Gate Bias Resister         R2K		0			7.400	3.550	
	0~	0			7.225	2.975	
	0~	0			7.775	3.650	
	0~	0			6.850	3.650	
		0			7.775	3.050	
	0~	0			6.475	3.725	
	TRICKIER				004	000	
					0.400	2 675	
	0~				R 125	2.073	
	0-	0			7.175	1 775	
	0~	0			7.175	2.175	
	0~	0			7.400	2.175	
Gate Bias Resister	0~	0			7.225	1.600	
	0~	0			7.775	2.275	
	0~	C			6.850	2.275	
	0~	0			7.775	1.675	
Pico Fuse F1K	0~	0			6.475	2.350	
NMOSFET T3A Discharge	Battery A				5.750	5.300	
NMOSFET T3B Discharge	Battery B				5.775	3.650	
LM150 IS1A Constant C	Current Source				3.975	3.092	
LM150 IS1B Constant (	Current Source				5.225	3.092	
	To	Total Power	#REF!	0.280W			





### APPENDIX K. ITAS THERMAL MASS/DISSIPATIONS

```
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitëf
                 Temp-C
                         ThrMass
                                  Dissip
                                           Comment
B SEON
        NodeNo
                                           EPS HOUSING WALL
                          -1.870
        901
                 30
Þ
                                           EPS HOUSING WALL
902
                 30
                          -.4179
                                                                           •
                                           EPS HOUSING WALL
                          -.4179
                                  0
        903
                 30
п
                                           EPS HOUSING WALL
                                  Ð
Þ
        904
                 30
                          -.4179
                                           EPS HOUSING WALL
        905
                          .4179
                                  O
    5
D
                                  0
                                           BOTTOM EPS HOUSING
                         -10.15
                 30
5
        906
                                           EPS HOUSING WALL
                 30
                         -1.871
                                  0
7
        907
                         -.4179
                                  0
                                          EPS HOUSING WALL
                 30
8
        908
                                          EPS HOUSING WALL
                 30
                         -.4179
                                  O
    9.
        909
-.4179
                 30
                                  0
                                          EPS HOUSING WALL
        910
10
                                          EPS HOUSING WALL
                         -.4179
                 30
                                  0
11
        911
                                          EPS HOUSING WALL
                         -10.02
                                  0
                 30
D
   12
        912
                                          EQUIPMENT PLATE TO BOTTOM EPS
                         -6.259
                                  0
   13
        913
                 30
п
                 30
                         -.2664
                                  0
                                          BOTTOM RAIL (+Y)
b
   14
        921
                 30
                         -.3995
                                  Q
                                          MIDDLE RAIL (+Y)
15
        922
                                                      (+Y)
                 3.0
                         -.2120
                                  0
                                           TOP RAIL
D
   16
        923
                                           BOTTOM RAIL (-Y)
        924
                 30
                         -.2664
                                  0
   17
                         -.3995
                                  0
                                           MIDDLE RAIL (-Y)
        925
                 30
   18
PgDn PgUp Home End
CTRL-F11mport ITAS_NC UDC Allowed
SHFT-FlImport Column
                                       Shift-F5Del/Pur
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
m SEON
                 Temp-C
                         ThrMass
                                  Dissip
                                          Comment
        NodeNo
                                           TOP RAIL (-Y)
                                                                           19
        926
                 30
                         -.2120
                                           TOP PCB THERMAL LAYER
        601
                 30
                         -.0043
                                  0
   20
602
                 30
                         -.0058
                                  0
П
   21
                         -.0016
                                  0
22
        603
                 30
   23
        604
                 30
                         -.0062
        605
                 30
                         -.0016
   24
Б
                         -.0085
D
   25
        606
                 30
                         -.0051
   26
        607
                 30
р
                         -.0070
                                  0
27
        608
                 30
   28
        609
                 30
                         -.0019
                                  0
п
                         -.0075
                                  0
   29
                 3.0
р
        610
   30
        611
                 30
                         -.0019
                 30
                         -.0103
ь
   31
        612
32
        613
                 30
                         -.0019
                         -.0015
   33
        614
                 30
                         -.0015
                                  0
34
        615
                 30
   35
                 30
                         -.0015
                                  0
        616
                          -.0015
                                  0
   36
        617
                 30
CTRL-FlImport ITAS_NC
                    UDC Allowed
                                                      PgDn PgUp Home End
SHFT-F11mport Column
                                       Shift-F5Del/Pur
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
```

```
éëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
□ SEQN
         NodeNo
                   Temp-C
                            ThrMass Dissip
                                               Comment
                   30
                            -.0019
                                               TOP PCB THERMAL LAYER
         618
                   30
                            -.0024
n
    38
         619
                                     n
    39
         620
                   30
                            -.0019
0
         621
                   30
    40
                            -.0019
п
                                     0
n
    41
         622
                   3.0
                            -.0019
D
    42
         623
                   30
                            -.0019
                                     Đ
                                                                                  \mathbf{n}
n
    43
         624
                  30
                            -.0024
                                                                                  D
         625 30
626 30
627 30
628 30
    44
                            -.0016
                                                                                  Ħ
45
                            -.0016
46
                            -.0016
                                     0
                                                                                  Þ
47
                           -.0016
                                     O
                                                                                  п
        629 30
630 30
1601 30
    48
                           -.0016
D
    49
                                   O
                           -.0020
50
                           -.0104
                                     Ω
                                               BOTTOM PCB THERMAL LAYER
                           -.0061 0
    51
         1602
                  30
                                              BOTTOM PCB THERMAL LAYER
р
п
    52
         1603
                  30
                            -.0044
                                              BOTTOM PCB THERMAL LAYER
                            -.0051 0
-.0020 0
n
    53
         1604
                  30
                                              BOTTOM PCB THERMAL LAYER
\mathbf{r}
    54
         1605
                  30
                                               BOTTOM PCB THERMAL LAYER
CTRL-FlImport ITAS_NC UDC Allowed
                                                          PgDn PgUp Home End
SHFT-FlImport Column
                                          Shift-F5Del/Pur
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
         NodeNo
                  Temp-C
                            ThrMass Dissip Comment
        1606
    55
\Box
                  3.0
                            -.0098 0
                                              BOTTOM PCB THERMAL LAYER
                                   Ŏ
                                             BOTTOM PCB THERMAL LAYER
BOTTOM PCB THERMAL LAYER
56
         1607
                  30
                           -.0031
    57
         1608
\mathbf{p}
                  3.0
                           -.0022
                                     0
                                             BOTTOM PCB THERMAL LAYER
    58
         1609
                           -.0028 0
    59
         1610
                30
-.0007 0
                                             BOTTOM PCB THERMAL LAYER
                                            BOTTOM PCB THERMAL LAYER
BOTTOM PCB THERMAL LAYER
BOTTOM PCB THERMAL LAYER
BOTTOM PCB THERMAL LAYER
BOTTOM PCB THERMAL LAYER
BOTTOM PCB THERMAL LAYER
BOTTOM PCB THERMAL LAYER
                           -.0010 0
-.0010 0
    60
         1611
                  30
\Box
                 30
n
    61
         1612
                           -.0049 0
                 30
    62
         1613
1614
                 30
30
                           -.0071 0
-.0111 0
-.0137 0
6.3
64
         1615
                 30
    65
         1616
                30
30
30
\overline{D}
    66
         1617
                           -.0046 0
                                             BOTTOM PCB THERMAL LAYER
                           -.0436 0
-.0595 0
    67
501
                                              TOP PCB BOTTOM POLY LAYER
    68
         502
r
                                              TOP PCB BOTTOM POLY LAYER
                 30
                           -.0159 0
    69
         503
Ď
                                             TOP PCB BOTTOM POLY LAYER
                 30
   70
504
                           -.0635
                                   0
                                             TOP PCB BOTTOM POLY LAYER
                          -.0159 0
-0.087 0
                                            TOP PCB BOTTOM POLY LAYER TOP PCB BOTTOM POLY LAYER
    71
         505
                  30
72
         506
                  30
CTRL-F1Import ITAS_NC UDC Allowed
                                                          PgDn PgUp Home End
SHFT-FlImport Column
                                          Shift-F5Del/Pur
                   F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëEESC:Quitëf
                 Temp-C
                                           Comment
                         ThrMass
                                  Dissip
 SEQN
        NodeNo
                                           TOP PCB BOTTOM POLY LAYER
                 30
                          -.0528
   73
        507
TOP PCB BOTTOM POLY LAYER
                 30
                          -.0720
                                  n
        508
74
                                           TOP PCB BOTTOM POLY LAYER
                          -.0192
                                  D
                 30
   75
        509
                                           TOP PCB BOTTOM POLY LAYER
                                  0
                 30
                          -.0768
        510
                                           TOP PCB BOTTOM POLY LAYER
                                  n
                 30
                          -.0192
   77
        511
п
                                           TOP PCB BOTTOM POLY LAYER
                                  0
                 30
                          -.1056
   78
        512
TOP PCB BOTTOM POLY LAYER
                         -.0190
                                  0
        513
                 30
TOP PCB BOTTOM POLY LAYER
                 30
                         -.0149
                                  0
        514
80
                                           TOP PCB BOTTOM POLY LAYER
                         -.0149
   81
        515
                 30
TOP PCB BOTTOM POLY LAYER
                                  O
                 30
                         -.0149
        516
   82
TOP PCB BOTTOM POLY LAYER
                         -.0149
                                  0
                 30
   83
        517
                                           TOP PCB BOTTOM POLY LAYER
                 30
                         -.0190
                                  D
        518
   84
Б
                                           TOP PCB BOTTOM POLY LAYER
                         -.0248
                                  0
D
   85
        519
                 30
                                           TOP PCB BOTTOM POLY LAYER
                 30
                          -.0195
                                  O
        520
   86
TOP PCB BOTTOM POLY LAYER
                 30
                         -.0195
                                  O
   87
        521
                                           TOP PCB BOTTOM POLY LAYER
                 30
                          -.0195
                                  n
   88
        522
В
                                           TOP PCB BOTTOM POLY LAYER
                          -.0195
                                  O
                 30
        523
89
                                           TOP PCB BOTTOM POLY LAYER
                                  0
   90
        524
                 30
                          -.0248
PgDn PgUp Home End
                      UDC Allowed
CTRL-FlImport ITAS_NC
                                       Shift-F5Del/Pur
SHFT-FlImport Column
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
eëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitëf
                 Temp-C
                          ThrMass Dissip
                                           Comment
□ SEQN
        NodeNo
                                           TOP PCB BOTTOM POLY LAYER
                          -.0161
                                   0
D
   91
        525
                 30
                                           TOP PCB BOTTOM POLY LAYER
                 30
                          -.0161
                                   n
        526
   92
\mathbf{p}
                                           TOP PCB BOTTOM POLY LAYER
                          -.0161
                                  0
                 30
   93
        527
                                           TOP PCB BOTTOM POLY LAYER
   94
        528
                 30
                          -.0161
                                  0
TOP PCB BOTTOM POLY LAYER
                          -.0161
                 3.0
   95
        529
\mathbf{p}
                                           TOP PCB BOTTOM POLY LAYER
                                  0
530
                 30
                          -.0205
                                           BOTTOM PCB BOTTOM POLY LAYER
                 30
                          -.1069
                                  0
   97
        1501
BOTTOM PCB BOTTOM POLY LAYER
                                  0
                         -.0627
        1502
                 30
98
                                           BOTTOM PCB BOTTOM POLY LAYER
        1503
                 30
                          -.0451
                                  0
   99
BOTTOM PCB BOTTOM POLY LAYER
                                  0
                          -.0526
                 30
  100
        1504
                                           BOTTOM PCB BOTTOM POLY LAYER
                 30
                          -.0200
                                  0
  101
        1505
BOTTOM PCB BOTTOM POLY LAYER
                          -.1002
                                  0
                 30
102
        1506
                                           BOTTOM PCB BOTTOM POLY LAYER
                 30
                          -.0313
                                  0
  103
        1507
BOTTOM PCB BOTTOM POLY LAYER
        1508
                 30
                          -.0226
                                  0
  104
D
                                           BOTTOM PCB BOTTOM POLY LAYER
                                  0
                 30
                          -.0288
105
        1509
                                           BOTTOM PCB BOTTOM POLY LAYER
                 30
                          -.0075
106
        1510
                                           BOTTOM PCB BOTTOM POLY LAYER
                                  Ω
                 30
                          -.0100
  107
        1511
                                           BOTTOM PCB BOTTOM POLY LAYER
                                   0
        1512
                 30
                          -.0100
  108
PgDn PgUp Home End
CTRL-FlImport ITAS_NC UDC Allowed
                                       Shift-F5Del/Pur
SHFT-FlImport Column
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
```

```
eëCtrl:Copyeeëeeë ITAS Node Data Entry For Thermal Analysis eeeeeeeEECC:Quites
□ SEQN
         NodeNo
                 Temp-C
                          ThrMass Dissip
                                           Comment
D
   109
         1513
                  30
                                           BOTTOM PCB BOTTOM POLY LAYER
                                   ñ
                          -.0501
110
         1514
                  3.0
                          -.0731
                                   n
                                           BOTTOM PCB BOTTOM POLY LAYER
   111
         1515
                  30
                                   n
D
                          -.1140
                                           BOTTOM PCB BOTTOM POLY LAYER
                                                                            \mathbf{r}
112
         1516
                 3.0
                          -.1403
                                   O
                                           BOTTOM PCB BOTTOM POLY LAYER
                                           BOTTOM PCB BOTTOM POLY LAYER
D
   113
         1517
                 30
                          -.0468
                                   0
                                                                            n
D
   114
         401
                 30
                          -.0043
                                   O
                                           TOP PCB THERMAL COPPER LAYER
                                                                            115
         402
                 30
                          -.0058
                                   0
                                           TOP PCB THERMAL COPPER LAYER
        403
D
   116
                 30
                          -.0016
                                   n
                                           TOP PCB THERMAL COPPER LAYER
   117
         404
                 30
n
                          -.0062
                                   0
                                           TOP PCB THERMAL COPPER LAYER
                                                                            TOP PCB THERMAL COPPER LAYER
   118
        405
                 30
-.0016
                                  O
                                                                            п
   119
         406
                 30
                          -.0085
                                           TOP PCB THERMAL COPPER LAYER
n
   120
        407
                 30
                          -.0051
                                  n
                                           TOP PCB THERMAL COPPER LAYER
п
   121
         408
                 30
                          -.0071
                                   O
                                           TOP PCB THERMAL COPPER LAYER
   122
         409
                 30
                                           TOP PCB THERMAL COPPER LAYER
п
                          -.0019
                                  0
        410
п
   123
                 30
                          -.0075
                                   O
                                           TOP PCB THERMAL COPPER LAYER
Þ
   124
        411
                 30
                          -.0019
                                  0
                                           TOP PCB THERMAL COPPER LAYER
   125
412
                 30
                          -.0103
                                  0
                                           TOP PCB THERMAL COPPER LAYER
   126
         413
                 3.0
                          -.0019
                                  0
                                           TOP PCB THERMAL COPPER LAYER
CTRL-Flimport ITAS NC
                     UDC Allowed
                                                       PgDn PgUp Home End
SHFT-FlImport Column
                                       Shift-F5Del/Pur
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
éëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
p SEON
        NodeNo
                 Temp-C
                          ThrMass Dissip
                                           Comment
127
        414
                 30
                          -.0015
                                  0
                                           TOP PCB THERMAL COPPER LAYER
128
        415
                 30
                          -.0015
                                  D
                                           TOP PCB THERMAL COPPER LAYER
  129
        416
                 3.0
                          -.0015
                                  0
                                           TOP PCB THERMAL COPPER LAYER
  130
417
                 3.0
                         -.0015
                                  0
                                           TOP PCB THERMAL COPPER LAYER
  131
        418
                 30
                                           TOP PCB THERMAL COPPER LAYER
-.0019
                                  0
  132
        419
30
                                           TOP PCB THERMAL COPPER LAYER
                          -.0024
                                  0
D
  133
        420
                 30
                                          TOP PCB THERMAL COPPER LAYER
                          -.0019
                                  0
b
  134
        421
                 3.0
                         -.0019
                                  0
                                           TOP PCB THERMAL COPPER LAYER
D
  135
        422
                 30
                         -.0019
                                  0
                                           TOP PCB THERMAL COPPER LAYER
  136
        423
                 30
                                           TOP PCB THERMAL COPPER LAYER
-.0019
                                  0
137
        424
                 30
                                           TOP PCB THERMAL COPPER LAYER
                         -.0024
Е
  138
        425
                 30
                         -.0016
                                0
                                           TOP PCB THERMAL COPPER LAYER
\mathbf{r}
  139
        426
                 30
                         -.0016
                                  0
                                           TOP PCB THERMAL COPPER LAYER
  140
        427
                 30
                         -.0016
                                  n
                                           TOP PCB THERMAL COPPER LAYER
        428
-
  141
                 30
                         -.0016
                                  0
                                           TOP PCB THERMAL COPPER LAYER
142
        429
                 30
                         -.0016
                                  0
                                           TOP PCB THERMAL COPPER LAYER
        430
                                           TOP PCB THERMAL COPPER LAYER
  143
                 30
                         -.0020
                                  0
                         -.0104
  144
        1401
                 3.0
                                  Λ
                                          BOTTOM PCB GROUND (COPPER) LAYER
CTRL-F1Import ITAS_NC UDC Allowed
                                                      PgDn PgUp Home End
SHFT-FlImport Column
                                       Shift-F5Del/Pur
                   F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

FlSave/Purge

```
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitëf
                         ThrMass Dissip
                                           Comment
m SEON
                 Temp-C
        NodeNo
                                           BOTTOM PCB GROUND (COPPER) LAYER
                          -.0061
        1402
                 30
  145
                                           BOTTOM PCB GROUND (COPPER) LAYER
                 30
                         -.0044
                                  Ω
146
        1403
                                           BOTTOM PCB GROUND (COPPER) LAYER
                          -.0051
                30
  147
        1404
0
                                           BOTTOM PCB GROUND (COPPER) LAYER
                         -.0020
        1405
                 30
  148
                                          BOTTOM PCB GROUND (COPPER) LAYER
                 30
                         -.0098
  149
        1406
                                          BOTTOM PCB GROUND (COPPER) LAYER
        1407
                30
                         -.0031
                                 Θ
  150
\mathbf{p}
                         -.0022 0
-.0028 0
-.0007 0
                                          BOTTOM PCB GROUND (COPPER) LAYER
               30
30
30
        1408
  151
                                          BOTTOM PCB GROUND (COPPER) LAYER
        1409
  152
n
                                          BOTTOM PCB GROUND (COPPER) LAYER
        1410
  153
        1410 30
1411 30
1412 30
1413 30
1414 30
                                          BOTTOM PCB GROUND (COPPER) LAYER
                         -.0010 0
154
                         -.0010 0
-.0049 0
-.0071 0
                                          BOTTOM PCB GROUND (COPPER) LAYER
  155
                                          BOTTOM PCB GROUND (COPPER) LAYER
  156
п
                                          BOTTOM PCB GROUND (COPPER) LAYER
  157
                                           BOTTOM PCB GROUND (COPPER) LAYER
                         -.0111
                30
                                 0
        1415
  158
0
                                           BOTTOM PCB GROUND (COPPER) LAYER
                         -.0137
                30
  159
        1416
                                           BOTTOM PCB GROUND (COPPER) LAYER
                 30
                         -.0046
        1417
160
                                           TOP PCB MIDDLE POLY LAYER
                                                                            0
                         -.0436
                30
  161
        301
p
                                           TOP PCB MIDDLE POLY LAYER
                 3.0
                          -.0595
                                  0
  162
PgDn PgUp Home End
CTRL-Flimport ITAS NC
                     UDC Allowed
                                       Shift-F5Del/Pur
SHFT-FlImport Column
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
éëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëESC:Quitë£
                         ThrMass Dissip
                                           Comment
m SEQN
        NodeNo
                 Temp-C
                                           TOP PCB MIDDLE POLY LAYER
                          -.0159
  163
        303
                 30
                          -.0635
                                           TOP PCB MIDDLE POLY LAYER
                                  0
                 30
        304
D
  164
                         -.0159
                                           TOP PCB MIDDLE POLY LAYER
                                  0
  165
        305
                 3.0
                                           TOP PCB MIDDLE POLY LAYER
                         -.0873
                                  0
        306
                 30
  166
E
                30
                         -.0528 0
                                           TOP PCB MIDDLE POLY LAYER
  167
        307
B
                         -.0720 0
-.0192 0
                                           TOP PCB MIDDLE POLY LAYER
                30
  168
        308
                                           TOP PCB MIDDLE POLY LAYER
                 30
                         -.0192
  169
309
                                 0
                                           TOP PCB MIDDLE POLY LAYER
  170
        310
                 30
                         -.0768
                                           TOP PCB MIDDLE POLY LAYER
                         -.0192 0
                3.0
  171
        311
-.1056 0
-.0190 0
-.0149 0
                                           TOP PCB MIDDLE POLY LAYER
                30
  172
        312
                                           TOP PCB MIDDLE POLY LAYER
  173
        313
                 30
30
                                           TOP PCB MIDDLE POLY LAYER
  174
        314
TOP PCB MIDDLE POLY LAYER
                         -.0149 0
-.0149 0
-.0149 0
  175
        315
                30
                                           TOP PCB MIDDLE POLY LAYER
  176
        316
                                           TOP PCB MIDDLE POLY LAYER
                 30
                         -.0149
177
        317
                                           TOP PCB MIDDLE POLY LAYER
                          -.0190
                 30
  178
c
        318
                                 0
                                           TOP PCB MIDDLE POLY LAYER
  179
        319
                 3.0
                          -.0248
                                           TOP PCB MIDDLE POLY LAYER
                                  0
                 3.0
                         -.0195
        320
  180
PgDn PgUp Home End
CTRL-Flimport ITAS_NC UDC Allowed
                                       Shift-F5Del/Pur
SHFT-FlImport Column
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
eëCtrl:Copyeeëëëëë ITAS Node Data Entry For Thermal Analysis eeëëëëëëESC:Quites
          NodeNo Temp-C ThrMass Dissip
p SEON
                                                  Comment
          321
30
                          TOP PCB MIDDLE POLY LAYER
                   30
n 181
                              -.0195
                                         Ω
       322 30

323 30

324 30

325 30

326 30

327 30

328 30

329 30

330 30

1301 30

1302 30

1303 30

1304 30

1305 30

1306 30

1307 30
p 183
   184
   185
186
   187
р
   188
n
   189
n
190
Б
   191
D
   192
   193
n 194
п
   195
n 196
         1307
                    30
                         -.0313 0 BOTTOM PCB MIDDLE POLY LAYER
n 197
          1308
                    30
198
CTRL-F1Import ITAS_NC UDC Allowed
                                                               PgDn PgUp Home End
SHFT-Filmport Column
                                             Shift-F5Del/Pur
     FlSave/Purge
                      F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
eëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
□ SEON
          NodeNo
                    Temp-C
                              ThrMass Dissip
                                                  Comment
                             -.0288 0 BOTTOM PCB MIDDLE POLY LAYER
-.0075 0 BOTTOM PCB MIDDLE POLY LAYER
                                                  BOTTOM PCB MIDDLE POLY LAYER
         1309
                    30
p 199
        1310
  200
        3.0
                                                BOTTOM PCB MIDDLE POLY LAYER
TOP PCB TOP COPPER LAYER
TOP PCB TOP COPPER LAYER
TOP PCB TOP COPPER LAYER
                            201
   202
   203
   204
   205
   206
D
   207
                            -.0468 0

-.0043 0

-.0058 0

-.0016 0

-.0062 0

-.0016 0

-.0085 0

-.0051 0
   208
.
   209
210
                                                 TOP PCB TOP COPPER LAYER
   211
                                                 TOP PCB TOP COPPER LAYER
•
   212
   213
                                                 TOP PCB TOP COPPER LAYER
                                                 TOP PCB TOP COPPER LAYER
  214
 215
                             -.0070 0 TOP PCB TOP COPPER LAYER
-.0019 0 TOP PCB TOP COPPER LAYER
                                                 TOP PCB TOP COPPER LAYER
   216
CTRL-Flimport ITAS_NC UDC Allowed
                                                               PgDn PgUp Home End
SHFT-Flimport Column
                                             Shift-F5Del/Pur
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
```

```
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
p SEON
        NodeNo
                 Temp-C
                          ThrMass
                                  Dissip
                                           Comment
                                           TOP PCB TOP COPPER LAYER
        210
                 30
                          -.0075
Ħ
  217
                                           TOP PCB TOP COPPER LAYER
                                   0
   218
        211
                 30
                          -.0019
                                           TOP PCB TOP COPPER LAYER
                 30
                          -.0103
                                   D
   219
        212
TOP PCB TOP COPPER LAYER
                 30
                          -.0019
                                   D
        213
220
                                           TOP PCB TOP COPPER LAYER
                                   Đ
                          -.0015
   221
        214
                 30
                                           TOP PCB TOP COPPER LAYER
                 30
                          -.0015
                                   ٥
₽
  222
        215
                          -.0015
                                           TOP PCB TOP COPPER LAYER
                 30
        216
n
  223
                                           TOP PCB TOP COPPER LAYER
        217
                 30
                          -.0015
                                  0
.
  224
                                           TOP PCB TOP COPPER LAYER
                                                                            n
                 30
                          -.0187
                                   Ω
        218
  225
TOP PCB TOP COPPER LAYER
c
  226
        219
                 30
                          -.0024
                                   0
                                           TOP PCB TOP COPPER LAYER
                 30
                          -.0019
                                   0
n
  227
        220
                                           TOP PCB TOP COPPER LAYER
  228
        221
                 30
                          -.0019
                                   0
-.0019
                                  Ø
                                           TOP PCB TOP COPPER LAYER
                 30
        222
229
                                           TOP PCB TOP COPPER LAYER
77
  230
        223
                 30
                          -.0019
                                  Ö
                                           TOP PCB TOP COPPER LAYER
                 30
                          -.0024
                                  0
        224
231
                                           TOP PCB TOP COPPER LAYER
                                                                            232
        225
                 30
                          -.0016
                                  0
                 30
                          -.0016
                                  0
                                           TOP PCB TOP COPPER LAYER
                                                                            E
        226
233
                                           TOP PCB TOP COPPER LAYER
   234
        227
                 30
                          -.0016
                                  0
PgDn PgUp Home End
CTRL-F1Import ITAS_NC
                     UDC Allowed
                                       Shift-F5Del/Pur
SHFT-FlImport Column
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
éëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
s SEQN , NodeNo
                 Temp-C
                          ThrMass Dissip
                                           Comment
                                           TOP PCB TOP COPPER LAYER
                 30
                          -.0016
                                  Ω
  235
        228
p
                                           TOP PCB TOP COPPER LAYER
                          -.0016
                                   0
E
  236
        229
                 30
                                           TOP PCB TOP COPPER LAYER
                 30
                          -.0020
                                  0
237
        230
                                           BOTTOM PCB TOP COPPER LAYER
                 30
                          -.0104
                                  0
238
        1201
                 30
                          -.0061
                                  0
                                           BOTTOM PCB TOP COPPER LAYER
        1202
c
  239
                                           BOTTOM PCB TOP COPPER LAYER
  240
        1203
                 30
                          -.0044
                                  0
Ξ
                                           BOTTOM PCB TOP COPPER LAYER
  241
        1204
                 30
                          -.0051
                                  0
Ξ
                                           BOTTOM PCB TOP COPPER LAYER
                                  0
  242
        1205
                 30
                          -.0020
D
                                  0
                                           BOTTOM PCB TOP COPPER LAYER
        1206
                 30
                          -.0098
243
                                           BOTTOM PCB TOP COPPER LAYER
244
        1207
                 30
                          -.0031
                                  Ω
                          -.0022
                                           BOTTOM PCB TOP COPPER LAYER
  245
        1208
                 30
                                  0
BOTTOM PCB TOP COPPER LAYER
                 30
                          -.0028
                                  n
₽
  246
        1209
                 30
                          -.0007
                                  0
                                           BOTTOM PCB TOP COPPER LAYER
247
        1210
                                           BOTTOM PCB TOP COPPER LAYER
                 3.0
                          -.0010
                                  0
\mathbf{p}
  248
        1211
                                           BOTTOM PCB TOP COPPER LAYER
        1212
                 30
                          -.0010
                                  0
249
                 30
                          -.0049
                                  0
                                           BOTTOM PCB TOP COPPER LAYER
250
        1213
                                           BOTTOM PCB TOP COPPER LAYER
  251
        1214
                 30
                          -.0071
                                  n
                                                                            -.0111
                                  0
                                           BOTTOM PCB TOP COPPER LAYER
        1215
                 30
  252
PgDn PgUp Home End
CTRL-FlImport ITAS_NC UDC Allowed
SHFT-FlImport Column
                                       Shift-F5Del/Pur
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
```

```
eëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
p SEON
        NodeNo Temp-C ThrMass Dissip Comment
               30
                                          BOTTOM PCB TOP COPPER LAYER
p 253
        1216
                         -.0137
                                          BOTTOM PCB TOP COPPER LAYER
                         -.0046
  254
        1217
                30
30
                         -.0436
                                0
                                         TOP PCB TOP POLY LAYER
  255
        101
30
                        -.0595 D
                                         TOP PCB TOP POLY LAYER
  256
        102
        103
               30
30
                        -.0159 0
-.0635 0
-.0159 0
                                         TOP PCB TOP POLY LAYER
п
  257
        104
                                         TOP PCB TOP POLY LAYER
   258
       105
               30
                                         TOP PCB TOP POLY LAYER
  259
n
                        -.0873 0
       106
               30
                                         TOP PCB TOP POLY LAYER
m 260
       107
               30
                        -.0528 0
                                         TOP PCB TOP POLY LAYER
p 261
                                                                         n
               30
30
30
30
30
30
                                         TOP PCB TOP POLY LAYER
                        -.0720 D
p 262
       108
                        -.0192 0
-.0768 0
-.0192 0
-.1056 0
                                         TOP PCB TOP POLY LAYER
  263
       109
       110
111
112
                                         TOP PCB TOP POLY LAYER
  264
ET.
                                         TOP PCB TOP POLY LAYER
п
  265
                                         TOP PCB TOP POLY LAYER
  266
                        -.0190 0
-.0149 0
-.0149 0
                                         TOP PCB TOP POLY LAYER
267
        113
                30
                                          TOP PCB TOP POLY LAYER
268
        114
               30
                                         TOP PCB TOP POLY LAYER
b
        115
  269
             30
                        -.0149 0
                                         TOP PCB TOP POLY LAYER
  270
        116
PgDn PgUp Home End
CTRL-Flimport ITAS NC UDC Allowed
SHFT-Flimport Column
                                      Shift-F5Del/Pur
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
eëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
p SEON
                Temp-C ThrMass Dissip Comment
        NodeNo
                                          TOP PCB TOP POLY LAYER
  271
        117
                30
                         -.0149
                                                                         0
                                         TOP PCB TOP POLY LAYER
272
                30
                        -.0190
        118
               30
                        -.0248 0
-.0195 0
-.0195 0
-.0195 0
  273
       119
                                         TOP PCB TOP POLY LAYER
                                         TOP PCB TOP POLY LAYER
274
        120
                30
               30
                                         TOP PCB TOP POLY LAYER
275
        121
  276
        122
                                         TOP PCB TOP POLY LAYER
               30
               30
                        -.0195 0
-.0248 0
-.0161 0
  277
        123
                                         TOP PCB TOP POLY LAYER
124
               30
  278
                                         TOP PCB TOP POLY LAYER
TOP PCB TOP POLY LAYER
  279
\mathbf{p}
  280
        126
               30
                        -.0161 0
                                         TOP PCB TOP POLY LAYER
                        -.0161 0
-.0161 0
-.0161 0
-.0205 0
-.1069 0
-.0627 0
        127
               30
30
30
                                        TOP PCB TOP POLY LAYER
TOP PCB TOP POLY LAYER
  281
282
129
                                         TOP PCB TOP POLY LAYER
  283
  284
        130
               30
                                         TOP PCB TOP POLY LAYER
               30
30
  285
        1101
                                         BOTTOM PCB TOP POLY LAYER
D
                                         BOTTOM PCB TOP POLY LAYER
286
        1102
                                     BOTTOM PCB TOP POLY LAYER
p 287
        1103
              30
                        -.0451 0
                                         BOTTOM PCB TOP POLY LAYER
  288
        1104
                30
                         -.0526
                                0
PgDn PgUp Home End
```

CTRL-FlImport ITAS\_NC UDC Allowed

SHFT-FlImport Column

Shift-F5Del/Pur

F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search

```
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitëf
m SEON
                 Temp-C
                          ThrMass Dissip
                                            Comment
        NodeNo
                                            BOTTOM PCB TOP POLY LAYER
                          -.0200
                 30
   289
        1105
                                            BOTTOM PCB TOP POLY LAYER
                                    n
                  30
                          -.1000
   290
        1106
                                            BOTTOM PCB TOP POLY LAYER
                                    O
                 30
                          -.0313
   291
        1107
                                            BOTTOM PCB TOP POLY LAYER
                                   О
   292
        1108
                 30
                          -.0226
                                  ō
                                            BOTTOM PCB TOP POLY LAYER
                 30
                          -.0288
   293
         1109
                          -.0075 D
-.0100 D
-.0100 O
-.0501 O
                                            BOTTOM PCB TOP POLY LAYER
                30
        1110
ь
   294
                30
30
30
                                            BOTTOM PCB TOP POLY LAYER
   295
        1111
                                            BOTTOM PCB TOP POLY LAYER
   296
         1112
BOTTOM PCB TOP POLY LAYER
   297
        1113
               30
30
30
30
30
30
30
                                            BOTTOM PCB TOP POLY LAYER
                          -.0731 0
   298
        1114
-.1140 0
-.1403 0
                                            BOTTOM PCB TOP POLY LAYER
   299
        1115
                                            BOTTOM PCB TOP POLY LAYER
                          -.1403
   300
        1116
77
                          -.0468 D
                                            BOTTOM PCB TOP POLY LAYER
   301
        1117
                          -.0001 .039
-.0001 0
                                            PIN THROUGH NODE 3.01
         2011
   302
PIN THROUGH NODE 3.01
   303
         2012
                                            PIN THROUGH NODE 3.01
         2013
                  30
                          -.0001
                                   D
   304
D
                                            PIN THROUGH NODE 3.01
                 30
                          -.0001
D
   305
         2014
                                            PIN THROUGH NODE 3.01
                           -.0001
                                    D
   306
         2015
                  30
UDC Allowed
                                                        PqDn PgUp Home End
CTRL-F1Import ITAS_NC
                                        Shift-F5Del/Pur
SHFT-F1Import Column
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
                 Temp-C
                          ThrMass Dissip
                                            Comment
m SEON
        NodeNo
                                            PIN THROUGH NODE 3.01
                          -.0001
                                    D.
   307
         2016
                  30
                                            PIN THROUGH 3.02 POLY LAYERS
                  30
                          -.0004
                                    .018
   308
        2021
0 0
                          -.0004
                                            PIN THROUGH 3.02 POLY LAYERS
                 30
  309
         2023
                                            PIN THROUGH 3.02 POLY LAYERS
   310
         2025
                  30
                          -.0004
                30
                          -.0001
                                            PIN THROUGH 3.02 COPPER LAYERS
   311
         2022
                                            PIN THROUGH 3.02 COPPER LAYERS PIN THROUGH 3.02 COPPER LAYERS
                          -.0001 0
                30
30
30
30
30
30
30
30
30
   312
         2024
                          -.0001 0
-.0001 .039
-.0001 0
        2026
313
                                            PIN THROUGH 3.03 POLY LAYERS
   314
         2031
        2033
                                            PIN THROUGH 3.03 POLY LAYERS
   315
Ħ
                          -.0001 0
-.0001 0
-.0001 0
                                            PIN THROUGH 3.03 POLY LAYERS
   316
         2035
                                            PIN THROUGH 3.03 COPPER LAYERS
   317
         2032
п
                          -.0001
                                            PIN THROUGH 3.03 COPPER LAYERS
   318
         2034
                                            PIN THROUGH 3.03 COPPER LAYERS
         2036
                          -.0001 0
   319
0
                                  .018
                          -.0004
                                            PIN THROUGH 3.04 POLY LAYERS
   320
         2041
                                            PIN THROUGH 3.04 POLY LAYERS
                                   0
                          -.0004
321
         2043
                                            PIN THROUGH 3.04 POLY LAYERS
                          -.0004
n
   322
         2045
                                            PIN THROUGH 3.04 COPPER LAYERS
PIN THROUGH 3.04 COPPER LAYERS
                                  0
         2042
                          -.0001
   323
                                    0
         2044
                  30
                           -.0001
   324
PgDn PgUp Home End
CTRL-Flimport ITAS NC UDC Allowed
SHFT-FlImport Column
                                        Shift-F5Del/Pur
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
```

```
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitës
p SEON
         NodeNo
                 Temp-C ThrMass Dissip
                                           Comment
   325
         2046
                                            PIN THROUGH 3.04 COPPER LAYERS
                 30
-.0001
                                   0
                                   .088
   326
         2051
                 30
                          -.0001
                                           PIN THROUGH 3.05 POLY LAYERS
п
   327
         2053
                 30
                          -.0001
                                   0
                                           PIN THROUGH 3.05 POLY LAYERS
                          -.0001 0
-.0004 .035
-.0004 0
                                           PIN THROUGH 3.05 POLY LAYERS
   328
         2055
                 30
2061
                 30
                                          PIN THROUGH 3.06 POLY LAYERS
п
   329
330
        2063
                 30
                                           PIN THROUGH 3.06 POLY LAYERS
                         -.0004 0
-.0001 0
-.0001 0
331
         2065
                 30
                                           PIN THROUGH 3.06 POLY LAYERS
                                           PIN THROUGH 3.05 COPPER LAYERS
ь
   332
        2052
                 30
        2054
333
                 30
                                          PIN THROUGH 3.05 COPPER LAYERS
        2062
2064
2066
                         -.0001 0
-.0001 0
-.0001 D
                 3.0
                                          PIN THROUGH 3.06 COPPER LAYER
n
   334
                                          PIN THROUGH 3.06 COPPER LAYER
PIN THROUGH 3.06 COPPER LAYER
п
   335
                 30
336
                 30
                         -.0001 .012
        2071
                 30
                                          PIN THROUGH 3.07 POLY LAYERS
   337
        2073
                         -.0001 0
-.0001 0
-.0001 0
                 3.0
n
   338
                                           PIN THROUGH 3.07 POLY LAYERS
   339
        2075
                 30
                                           PIN THROUGH 3.07 POLY LAYERS
D
   340
        2072
                 30
                                           PIN THROUGH 3.07 COPPER LAYERS
D
341
        2074
                 30
                          -.0001
                                 0
                                           PIN THROUGH 3.07 COPPER LAYERS
n
   342
        2076
                 30
                          -.0001
                                   0
                                           PIN THROUGH 3.07 COPPER LAYERS
CTRL-FlImport ITAS_NC UDC Allowed
                                                       PgDn PgUp Home End
SHFT-Flimport Column
                                       Shift-F5Del/Pur
    FlSave/Purge
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
eëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë:
m SEON
        NodeNo
                 Temp-C
                          ThrMass Dissip
                                           Comment
        2081
                 30
                          -.0004
                                           PIN THROUGH 3.08 POLY LAYERS
                                  .015
   344
        2083
                 30
                          -.0004
                                   0
                                           PIN THROUGH 3.08 POLY LAYERS
п
                         -.0004 0
-.0001 0
   345
        2085
                 30
PIN THROUGH 3.08 POLY LAYERS
                                           PIN THROUGH 3.08 COPPER LAYERS
   346
        2082
3.0
        2084 30
2086 30
2091 30
2093 30
                         -.0001 0
   347
                                          PIN THROUGH 3.08 COPPER LAYERS
                         -.0001 0
-.0001 .05
-.0001 0
   348
D
                                          PIN THROUGH 3.08 COPPER LAYERS
D
   349
                                           PIN THROUGH 3.09 POLY LAYERS
        2093
   350
                                           PIN THROUGH 3.09 POLY LAYERS
               30
30
30
                         -.0001 0
                                          PIN THROUGH 3.09 POLY LAYERS
   351
        2095
   352
        2092
                         -.0001 0
b
                                          PIN THROUGH 3.09 COPPER LAYERS
   353
        2094
                 30
                         -.0001
                                  0
PIN THROUGH 3.09 COPPER LAYERS
                                 0
                30
   354
        2096 30
2101 30
2103 30
2105 30
2102 30
2104 30
        2096
                                          PIN THROUGH 3.09 COPPER LAYERS
                         -.0001
                         -.0004 .015
355
                                         PIN THROUGH 3.10 POLY LAYERS
356
                         -.0004
                                 0
                                           PIN THROUGH 3.10 POLY LAYERS
  357
-.0004
                                           PIN THROUGH 3.10 POLY LAYERS
  358
                                          PIN THROUGH 3.10 COPPER LAYERS
                          -.0001
                                  0
  359
                                 0
p
                         -.0001
                                           PIN THROUGH 3.10 COPPER LAYERS
   360
        2106
                 30
                          -.0001
                                           PIN THROUGH 3.10 COPPER LAYERS
CTRL-FlImport ITAS_NC UDC Allowed
                                                      PgDn PgUp Home End
SHFT-Flimport Column
                                       Shift-F5Del/Pur
                  F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
éëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëEESC:Quitëf
m SEON
        NodeNo
                 Temp-C
                         ThrMass Dissip
                                           Comment
                                           PIN THROUGH 3.11 POLY LAYERS
                          -.0001
  361
        2111
                 30
\mathbf{n}
                                           PIN THROUGH 3.11 POLY LAYERS
                          -.0001
                                  n
   362
        2113
                 30
                                           PIN THROUGH 3.11 POLY LAYERS
                 30
                          -.0001
                                  0
   363
        2115
PIN THROUGH 3.12 COPPER LAYERS
                          -.0001
                                                                            30
        2112
n
   364
                                ŏ
                                           PIN THROUGH 3.12 COPPER LAYERS
   365
        2114
                 30
                         -.0001
                                           PIN THROUGH 3.12 COPPER LAYERS
                 30
                         -.0001
                                  0
   366
        2116
                                           PIN THROUGH 3.12 POLY LAYER
        2121
                 30
                         -.0002
n
   367
                                 O
                                           PIN THROUGH 3.12 POLY LAYER PIN THROUGH 3.12 POLY LAYER
                30
                         -.0002
        2123
   368
                                  0
        2125
                 30
                         -.0002
   369
п
                                           PIN THROUGH 3.12 COPPER LAYERS
                                  0
   370
        2122
                 30
                         -.0001
D
                                           PIN THROUGH 2.01 POLY LAYER
                30
                         -.0001 .004
n
   371
        2131
               30
30
                         -.0001 0
                                           PIN THROUGH 2.01 POLY LAYER
   372
        2133
                                           PIN THROUGH 2.01 POLY LAYER
                         -.0001
                                  O
        2135
ь.
   373
                                           PIN THROUGH 2.01 COPPER LAYERS
                                  0
   374
        2132
                 30
                         -.0001
                                           PIN THROUGH 2.01 COPPER LAYERS
                30
                          -.0001
        2134
п
   375
                                           PIN THROUGH 2.01 COPPER LAYERS
   376
        2136
                 30
                          -.0001
                                  n
D
                                  .004
                                           PIN THROUGH 2.02 POLY LAYERS
                 30
                         -.0001
  377
2141
                                           PIN THROUGH 2.02 POLY LAYERS
   378
        2143
                 30
                          -.0001
                                  n
PgDn PgUp Home End
CTRL-Flimport ITAS_NC
                      UDC Allowed
SHFT-FlImport Column
                                       Shift-F5Del/Pur
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëESC:Quitëf
                         ThrMass Dissip
                                           Comment
m SEON
        NodeNo
                 Temp-C
                                           PIN THROUGH 2.02 POLY LAYERS
                 30
                         -.0001
                                  0
        2145
379
                                           PIN THROUGH 2.02 COPPER LAYERS
        2142
                 30
                         -.0001
                                  0
   380
                                           PIN THROUGH 2.02 COPPER LAYERS
                 30
                         -.0001
  381
        2144
30
                                 0
                                           PIN THROUGH 2.02 COPPER LAYERS
  382
        2146
                         -.0001
                                .001
                                           PIN THROUGH 2.03 POLY LAYER
                         -.0001
  383
        2151
                 30
E
                30
                                           PIN THROUGH 2.03 POLY LAYER
                         -.0001
b
  384
        2153
                                           PIN THROUGH 2.03 POLY LAYER
               30
                         -.0001
                                 0
  385
        2155
                                 ó
               30
                         -.0001
                                           PIN THROUGH 2.03 COPPER LAYERS
        2152
\mathbf{p}
  386
                                           PIN THROUGH 2.03 COPPER LAYERS
п
  387
        2154
                 30
                         -.0001
                                  0
                30
                                           PIN THROUGH 2.03 COPPER LAYERS
                                 0
                         -.0001
п
  388
        2156
                         -.0001
                                 .001
                                           PIN THROUGH 2.04 POLY LAYER
  389
        2161
                30
30
30
                         -.0001
                                  0
                                           PIN THROUGH 2.04 POLY LAYER
Б
  390
        2163
                                           PIN THROUGH 2.04 POLY LAYER
  391
        2165
                         -.0001
                                  0
                30
                         -.0001
                                  0
                                           PIN THROUGH 2.04 COPPER LAYERS
  392
        2162
PIN THROUGH 2.04 COPPER LAYERS
        2164
                30
                         -.0001
                                  0
  393
                                           PIN THROUGH 2.04 COPPER LAYERS
                 30
                         -.0001
  394
\Box
        2166
                                           PIN THROUGH 2.05 POLY LAYERS
  395
        2171
                 30
                         -.0001
                                  ٥
PIN THROUGH 2.05 POLY LAYERS
  396
        2173
                 30
                          -.0001
                                  0
                                                                            UDC Allowed
                                                       PgDn PgUp Home End
CTRL-FlImport ITAS NC
SHFT-FlImport Column
                                       Shift-F5Del/Pur
                  F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
eëCtrl:Copyeeëeeë ITAS Node Data Entry For Thermal Analysis eeeeeeeECC:Quites
            NodeNo Temp
2175 30
2172 30
2174 30
2176 30
2181 30
2183 30
2185 30
2188 30
2188 30
2189 30
2189 30
2199 30
2199 30
2194 30
2196 30
2196 30
2201 30
2203 30
5ëëëëëëëëëëëëëë
m SEON
                             Temp-C ThrMass Dissip Comment
              NodeNo
                                          -.0001
-.0001
                                                                         PIN THROUGH 2.05 POLY LAYERS
    397
     398
                                          -.0001 0
-.0001 0
-.0001 0
-.0001 0
-.0001 0
-.0001 0
                                                           0
                                                                         PIN THROUGH 2.05 COPPER LAYERS
n
                                       -.0001 0 PIN THROUGH 2.06 COPPER LAYERS
-.0001 0 PIN THROUGH 2.06 POLY LAYERS
-.0001 0 PIN THROUGH 2.06 COPPER LAYERS
-.0003 .008 PIN THROUGH 2.07 POLY LAYERS
-.0003 0 PIN THROUGH 2.07 POLY LAYERS
-.0003 0 PIN THROUGH 2.07 POLY LAYERS
-.0001 0 PIN THROUGH 2.07 POLY LAYERS
-.0001 0 PIN THROUGH 2.07 POLY LAYERS
-.0001 0 PIN THROUGH 2.07 POLY LAYERS
                                                                        PIN THROUGH 2.05 COPPER LAYERS
     399
     400
n 401
     402
     403
     404
     405
\mathbf{n}
     406
407
    408
п
     409
n
    410
                                           -.0001 0
-.0001 0
    411
                                                                        PIN THROUGH 2.07 COPPER LAYERS
PIN THROUGH 2.08 POLY LAYERS
п
    412
                                          -.0003 .008
-.0003 0
     413
                                                                         PIN THROUGH 2.08 POLY LAYERS
     414
CTRL-F1Import ITAS_NC UDC Allowed
                                                                                             PgDn PgUp Home End
SHFT-F11mport Column
                                                                   Shift-F5Del/Pur
        F1Save/Purge
                                  F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
éëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
□ SEQN
              NodeNo Temp-C ThrMass Dissip Comment
                                           -.0003 D
                                                                         PIN THROUGH 2.08 POLY LAYERS
D 415
             2205 30
             -.0001 0
-.0001 0
                                                                         PIN THROUGH 2.08 COPPER LAYERS
    416
              2202
                             30
                                                                         PIN THROUGH 2.08 COPPER LAYERS
   417
\Box
                                          -.0001 0 PIN THROUGH 2.08 COPPER LAYERS
-.0003 .003 PIN THROUGH 2.09 POLY LAYERS
-.0003 0 PIN THROUGH 2.09 POLY LAYERS
-.0003 0 PIN THROUGH 2.09 POLY LAYERS
   418
п
    419
    420
PIN THROUGH 2.09 COPPER LAYERS
-.0001 0 PIN THROUGH 2.09 COPPER LAYERS
-.0001 0 PIN THROUGH 2.09 COPPER LAYERS
-.0003 .006 PIN THROUGH 2.10 POLY LAYERS
-.0003 0 PIN THROUGH 2.10 POLY LAYERS
-.0003 0 PIN THROUGH 2.10 POLY LAYERS
-.0001 0 PIN THROUGH 2.10 COPPER LAYERS
   421
422
    423
424
    425
426
    427
E 428
E 429
                                                        0 PIN THROUGH 2.10 COPPER LAYERS
0 PIN THROUGH 2.11 POLY LAYERS
0 PIN THROUGH 2.11 POLY LAYERS
  430
D
   431
                                           -.0003
   432
                                            -.0003
CTRL-FlImport ITAS_NC UDC Allowed SHFT-FlImport Column
                                                                                            PgDn PgUp Home End
                                                                   Shift-F5Del/Pur
       F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
éëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitëf
п
                          ThrMass Dissip
                                           Comment
m SEON
        NodeNo
                 Temp-C
                                           PIN THROUGH 2.11 POLY LAYERS
                 30
                          -.0003
  433
        2235
PIN THROUGH 2.11 COPPER LAYERS
                          -.0001
                 30
                                  0
        2232
434
                                           PIN THROUGH 2.11 COPPER LAYERS
                          -.0001
                                  0
  435
        2234
                 30
п
                                           PIN THROUGH 2.11 COPPER LAYERS
                 30
                          -.0001
                                  0
        2236
  436
0
                                           PIN THROUGH 2.12 POLY LAYER
                 30
                          -.0003
п
  437
        2241
                                           PIN THROUGH 2.12 POLY LAYER
                                  0
        2243
                 30
                          -.0003
438
                                           PIN THROUGH 2.12 POLY LAYER
        2245
                 30
                          -.0003
                                  0
п
  439
                                           PIN THROUGH 2.12 COPPER LAYERS
                         -.0001
                                  0
  440
        2242
                 30
                                           PIN THROUGH 2.12 COPPER LAYERS
                 30
                          -.0001
                                  n
        2244
  441
D
                                           PIN THROUGH 2.12 COPPER LAYERS
                          -.0001
                                  O
                 30
442
        2246
                                           PIN THROUGH 2.13 POLY LAYERS
                                  .006
                 30
                          -.0001
  443
        2251
D
                                           PIN THROUGH 2.13 POLY LAYERS
                 30
                          -.0001
                                  O
        2253
444
                                           PIN THROUGH 2.13 POLY LAYERS
77
  445
        2255
                 30
                          -.0001
                                  O
                                           PIN THROUGH 2.13 COPPER LAYERS
                                  0
                 30
                          -.0001
        2252
р
  446
                                           PIN THROUGH 2.13 COPPER LAYERS
                          -.0001
                                  D
  447
        2254
                 30
D
                                           PIN THROUGH 2.13 COPPER LAYERS
                          -.0001
                                  0
        2256
                 30
  448
Fī
                                           PIN THROUGH 2.14 POLY LAYERS
                                  .006
                          -.0001
449
        2261
                 30
                                           PIN THROUGH 2.14 POLY LAYERS
        2263
                 30
                          -.0001
                                  0
  450
Б
PgDn PgUp Home End
CTRL-Flimport ITAS_NC
                       UDC Allowed
SHFT-FlImport Column
                                       Shift-F5Del/Pur
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitëf
                          ThrMass Dissip
                                           Comment
                 Temp-C
        NodeNo
 SEON
                                           PIN THROUGH 2.14 POLY LAYERS
n
  451
        2265
                 30
                          -.0001
                                  0
                                           PIN THROUGH 2.14 COPPER LAYERS
                 30
                          -.0001
                                  0
        2262
452
                                           PIN THROUGH 2.14 COPPER LAYERS
                                  0
                 30
                          -.0001
  453
        2264
                                           PIN THROUGH 2.14 COPPER LAYERS
                 30
                          -.0001
                                  0
        2266
454
                                  .001
                                           PIN THROUGH 2.15 POLY LAYERS
                          -.0001
  455
        2271
                 30
PIN THROUGH 2.15 POLY LAYERS
  456
        2273
                 30
                          -.0001
                                  0
-.0001
                                  0
                                           PIN THROUGH 2.15 POLY LAYERS
                 30
  457
        2275
PIN THROUGH 2.15 COPPER LAYERS
                          -.0001
                                  0
  458
        2272
                 30
0
                                           PIN THROUGH 2.15 COPPER LAYERS
                 30
                         -.0001
  459
        2274
PIN THROUGH 2.15 COPPER LAYERS
                          -.0001
                                  0
  460
        2276
                 30
\mathbf{p}
                                  .001
                                           PIN THROUGH 2.16 POLY LAYERS
                 30
                          -.0001
  461
        2281
PIN THROUGH 2.16 POLY LAYERS
  462
        2283
                 30
                          -.0001
                                  0
n
                                           PIN THROUGH 2.16 POLY LAYERS
                 30
                          -.0001
                                  0
463
        2285
                                           PIN THROUGH 2.16 COPPER LAYERS
                                  Ω
        2282
                 30
                          -.0001
  464
                                           PIN THROUGH 2.16 COPPER LAYERS
                          -.0001
                                  0
  465
        2284
                 30
Ö
                                           PIN THROUGH 2.16 COPPER LAYERS
                                  0
                          -.0001
  466
        2286
                 30
PIN THROUGH 2.17 POLY LAYERS
                          -.0001
                                  0
        2291
                 30
467
                                           PIN THROUGH 2.17 POLY LAYERS
                                                                            Ħ
                          -.0001
                                  0
                 30
  468
        2293
PgDn PgUp Home End
CTRL-FlImport ITAS_NC
                     UDC Allowed
                                       Shift-F5Del/Pur
SHFT-F1Import Column
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
eëCtrl:Copyeeëeeë ITAS Node Data Entry For Thermal Analysis eeëeeeeeESC:Quite£
m SEQN
                                 ThrMass Dissip Comment
            NodeNo
                       Temp-C
           2295
                                   -.0001
    469
                       30
                                                          PIN THROUGH 2.17 POLY LAYERS
470
            2292
                       30
                                   -.0001
                                               0
                                                          PIN THROUGH 2.17 COPPER LAYERS
           2294 30
2296 30
2301 30
2303 30
    471
                                   -.0001 D
                                                         PIN THROUGH 2.17 COPPER LAYERS
                                -.0001 D
-.0011 D
-.0011 D
-.0011 D
-.0001 D
                                                        PIN THROUGH 2.17 COPPER LAYERS
п
   472
                                                        PIN THROUGH 2.18 POLY LAYERS
PIN THROUGH 2.18 POLY LAYERS
    473
   474
2303 30
2305 30
2302 30
2304 30
2306 30
3011 30
3013 30
3015 30
                                                        PIN THROUGH 2.18 POLY LAYERS
PIN THROUGH 2.18 COPPER LAYERS
PIN THROUGH 2.18 COPPER LAYERS
475
    476
477
PIN THROUGH 2.18 COPPER LAYERS
   478
р
                                                        PIN THROUGH 4.00 POLY LAYERS
479
                                                      PIN THROUGH 4.00 POLY LAYERS
PIN THROUGH 4.00 POLY LAYERS
PIN THROUGH 4.00 COPPER LAYERS
D
    480
          3015 30
3012 30
3014 30
3016 30
3021 30
3023 30
\Box
   481
n
   482
п
   483
                                  -.0001 0
                                                         PIN THROUGH 4.00 COPPER LAYERS
484
                                  -.0001 0
                                                          PIN THROUGH 4.00 COPPER LAYERS
                                              .113
                                                          PIN THROUGH 5.01 POLY LAYERS
р
    485
                                   -.0006
                                  -.0006
                                               O
                                                          PIN THROUGH 5.01 POLY LAYERS
    486
CTRL-F1Import ITAS_NC UDC Allowed
                                                                          PgDn PgUp Home End
SHFT-FlImport Column
                                                     Shift-F5Del/Pur
                           F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
      FlSave/Purge
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
p SEON
           NodeNo Temp-C ThrMass Dissip Comment
                                  -.0006 D
   487
           3025
                       30
                                                          PIN THROUGH 5.01 POLY LAYERS
          3022 30
3024 30
3026 30
3031 30
3033 30
3035 30
3032 30
3034 30
3041 30
3043 30
3044 30
3044 30
3044 30
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3044 30
3053 30
3053 30
                                                         PIN THROUGH 5.01 COPPER LAYERS
  488
           3022
                       30
  489
                                  -.0001
                                                         PIN THROUGH 5.01 COPPER LAYERS
                                 -.0001 D PIN THROUGH 5.01 COPPER LAYERS
-.0006 .036 PIN THROUGH 5.02 POLY LAYERS
-.0006 O PIN THROUGH 5.02 POLY LAYERS
   490
\mathbf{r}
   491
   492
                                 -.0006 0

-.0001 0

-.0001 0

-.0001 0

-.0002 0

-.0002 0

-.0002 0

-.0001 0
493
                                                        PIN THROUGH 5.02 POLY LAYERS
                                                        PIN THROUGH 5.02 COPPER LAYERS
PIN THROUGH 5.02 COPPER LAYERS
    494
495
                                                       PIN THROUGH 5.02 COPPER LAYERS
PIN THROUGH 5.03 POLY LAYERS
   496
   497
В
498
   499
В
  500
                                                        PIN THROUGH 5.03 COPPER LAYERS
                                 -.0001 0
501
                                                        PIN THROUGH 5.03 COPPER LAYERS
                                            .05
   502
                                  -.0001
                                                   PIN THROUGH 5.03 COF.L..
PIN THROUGH 5.04 POLY LAYERS
PIN THROUGH 5.04 POLY LAYERS
PIN THROUGH 5.03 COPPER LAYERS
503
                                  -.0005
   504
                                   -.0005
PgDn PgUp Home End
SHFT-FlImport Column
```

CTRL-FlImport ITAS\_NC UDC Allowed

Shift-F5Del/Pur

FlSave/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F1OSearch

```
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
m SEON
         NodeNo
                  Temp-C
                           ThrMass Dissip
                                             Comment
                                             PIN THROUGH 5.04 POLY LAYERS
                           -.0005
                  30
   505
         3055
₽
                                             PIN THROUGH 5.04 COPPER LAYERS
   506
         3052
                  30
                           -.0001
                                    n
                                             PIN THROUGH 5.04 COPPER LAYERS
                           -.0001
                                    0
   507
         3054
                  30
п
                                             PIN THROUGH 5.04 COPPER LAYERS
                  30
                           -.0001
                                    0
   508
         3056
п
                          -.0006
                                    .025
                                             PIN THROUGH 5.05 POLY LAYERS
                                                                               509
         3061
                  30
                                             PIN THROUGH 5.05 POLY LAYERS
         3063
                  30
                          -.0006
                                    O
n
   510
                  30
                           -.0006
                                             PIN THROUGH 5.05 POLY LAYERS
         3065
   511
П
                                            PIN THROUGH 5.05 COPPER LAYERS
                          -.0006
                                    0
   512
         3062
                  30
                                            PIN THROUGH 5.05 COPPER LAYERS
                          -.0001
                                    0
                                                                              р
   513
         3064
                  30
n
                                            PIN THROUGH 5.05 COPPER LAYERS
                  30
                          -.0001
                                    O
514
         3066
                          -.0001
                                    .1
                                            PIN THROUGH 6.03 POLY LAYERS
                                                                              b
         3091
                  30
   515
PIN THROUGH 6.03 POLY LAYERS
                                                                               п
                          -.0001
                                    O
                  30
p
   516
         3093
                                            PIN THROUGH 6.03 POLY LAYERS
   517
         3095
                  30
                          -.0001
                                    0
\mathbf{r}
                                            PIN THROUGH 6.03 COPPER LAYERS
ь
   518
         3092
                  30
                          -.0001
                                    n
                                            PIN THROUGH 6.03 COPPER LAYERS
         3094
                  30
                           -.0001
                                    Ð
                                                                               r.
   519
PIN THROUGH 6.03 COPPER LAYERS
         3096
                  30
                          -.0001
                                    0
   520
         3101
                  30
                           -.0001
                                    .125
                                             PIN THROUGH 6.04 POLY LAYERS
                                                                              П
521
                                            PIN THROUGH 6.04 POLY LAYERS
                                    n
   522
         3103
                  30
                           -.0001
PgDn PgUp Home End
CTRL-Flimport ITAS_NC
                       UDC Allowed
                                        Shift-F5Del/Pur
SHFT-FlImport Column
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     F1Save/Purge
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
□ SEON
        NodeNo
                 Temp-C
                          ThrMass Dissip
                                             Comment
  523
        31.05
                  30
                          -.0001
                                    0
                                             PIN THROUGH 6.04 POLY LAYERS
                                                                              Ħ
                                            PIN THROUGH 6.04 COPPER LAYERS
  524
         3102
                  30
                          -.0001
                                    n
PIN THROUGH 6.04 COPPER LAYERS
  525
        3104
                  30
                           -.0001
PIN THROUGH 6.04 COPPER LAYERS
                                                                              n
  526
        3106
                  30
                          -.0001
                                    0
.025
                                            PIN THROUGH 6.05 POLY LAYERS
                                                                              D
527
        3111
                  30
                          -.0001
                                            PIN THROUGH 6.05 POLY LAYERS
                          -.0001
D
   528
         3113
                  30
                                    Ω.
                          -.0001
                                            PIN THROUGH 6.05 POLY LAYERS
\overline{\mathbf{p}}
   529
        3115
                 30
                                    0
                          -.0001
                                    0
                                            PIN THROUGH 6.05 COPPER LAYER
                 30
530
        3112
                 30
                          -.0001
                                    0
                                            PIN THROUGH 6.05 COPPER LAYER
531
        3114
                 30
                          -.0001
                                   0
                                            PIN THROUGH 6.05 COPPER LAYER
532
        3116
                                    .025
                                            PIN THROUGH 6.06 POLY LAYERS
  533
        3121
                 30
                          -.0003
                 30
                          -.0003
                                            PIN THROUGH 6.06 POLY LAYERS
                                                                              D
534
        3123
                                            PIN THROUGH 6.06 POLY LAYERS
535
        3125
                 30
                          -.0003
                                   0
                          -.0001
                                            PIN THROUGH 6.06 COPPER LAYERS
   536
        3122
                 30
-.0001
                                            PIN THROUGH 6.06 COPPER LAYERS
                 30
                                   0
-
   537
        3124
                          -.0001
                                    0
                                            PIN THROUGH 6.06 COPPER LAYERS
538
        3126
                 30
                                            PIN THROUGH 7.01 POLY LAYERS
                          -.0002
                                   .375
539
        3141
                 30
   540
        3143
                          -.0002
                                    0
                                            PIN THROUGH 7.01 POLY LAYERS
CTRL-FlImport ITAS NC
                       UDC Allowed
                                                        PgDn PgUp Home End
SHFT-F1Import Column
                                        Shift-F5Del/Pur
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
éëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëESC:Quitë£
m SEON
                 Temp-C
        NodeNo
                         ThrMass Dissip
                                          Comment
   541
        3145
                 30
                         -.0002
                                          PIN THROUGH 7.01 POLY LAYERS
PIN THROUGH 7.01 COPPER LAYER
                         -.0001
        3142
                3.0
542
                                 Ω
        3144
   543
                 30
                         -.0001
                                 0
                                          PIN THROUGH 7.01 COPPER LAYER
                                          PIN THROUGH 7.01 COPPER LAYER
                30
                         -.0001
                                 0
        3146
п
   544
п
   545
        3151
                 30
                         -.0017
                                 .105
                                          PIN THROUGH 7.02 POLY LAYERS
        3153
                30
                         -.0017
                                 Ō
                                          PIN THROUGH 7.02 POLY LAYERS
   546
n
                                                                         п
                                O
                                          PIN THROUGH 7.02 POLY LAYERS
   547
        3155
                30
                         -.0017
   548
        3152
                30
                         -.0001
                                 0
                                          PIN THROUGH 7.02 COPPER LAYERS
                                                                         n
                                         PIN THROUGH 7.02 COPPER LAYERS
                30
                         -.0001
D
   549
        3154
                                 0
                                                                         PIN THROUGH 7.02 COPPER LAYERS.
   550
        3156
                30
                         -.0001
                                0 -
.150
                30
                                         PIN THROUGH 7.03 POLY LAYERS
        3161
                         -.0020
551
                                                                         n
                30
                         -.0020
                                          PIN THROUGH 7.03 POLY LAYERS
п
   552
        3163
                                 D.
                                                                         n
                                0
                                         PIN THROUGH 7.03 POLY LAYERS
   553
                30
                         -.0020
3165
                                                                         D
                30
                         -.0001
                                         PIN THROUGH 7.03 COPPER LAYERS
   554
        3162
                30
                         -.0001
                                O
                                         PIN THROUGH 7.03 COPPER LAYERS
   555
        3164
n
                                                                         77
                30
                         -.0001
                                          PIN THROUGH 7.03 COPPER LAYERS
556
        3166
        3171
                30
                         -.0004
                                          PIN THROUGH 8.00 POLY LAYERS
   557
П
                                 0
                                                                         п
   558
        3173
                30
                         -.0004
                                          PIN THROUGH 8.00 POLY LAYERS
CTRL-Flimport ITAS NC
                     UDC Allowed
                                                     PgDn PgUp Home End
SHFT-Flimport Column
                                      Shift-F5Del/Pur
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
ėëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëESC:Quitë£
p SEON
                Temp-C ThrMass Dissip
        NodeNo
                                         Comment
                                                                         п
  559
        3175
                30
                         -.0004
                                         PIN THROUGH 8.00 POLY LAYERS
        3172
  560
                30
                         -.0001
                                 n
                                         PIN THROUGH 8.00 COPPER LAYERS
\mathbf{p}
                                                                         17
                         -.0001
  561
        3174
                30
                                         PIN THROUGH 8.00 COPPER LAYERS
                                0
                        -.0001
        3176
                30
                                         PIN THROUGH 8.00 COPPER LAYERS
562
                                                                         n
                         -.0001
  563
        2056
                30
                                 0
                                         PIN THROUGH 3.05 COPPER LAYER
30
                                0
  564
        2124
                        -.0001
                                         PIN THROUGH 3.12 COPPER LAYER
D
  565
        2126
               30
                         -.0001
                                0
                                         PIN THROUGH 3.12 COPPER LAYER
D
                                                                         n
                                                                         n
b
                                                                         D
n
UDC Allowed
                                                     PgDn PgUp Home End
SHFT-FlImport Column
                                      Shift-F5Del/Pur
```

CTRL-FlImport ITAS NC

FlSave/Purge

F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search

## APPENDIX L. NODE TO NODE CONDUCTANCE CALCULATIONS

ą.	HOUSING	TO HOUS	ING NODE	S	1
	! !				
i .	1				i i
	1				
From	То			k	Conductance
901		0.3138	5.175		
901	906	1.88	5.2845	4.31	
901	911		4.925	4.31	
901	912	1.6	5.0845		
902	903	0.3138	2.25	4.31	0.60110133
902	906	0.47	4.7845	4.31	0.42338802
 902	907	0.3138	4.925	4.31	0.27461482
 902	912	0.45	4.5845	4.31	0.42305594
 903	904	0.3138	2.25	4.31	0.60110133
 903	906	0.45	4.5845	4.31	0.42305594
903	912	0.45	4.5845	4.31	0.42305594
904	905	0.3138	2.25	4.31	0.60110133
904	906	0.45	4.5845	4.31	0.42305594
 904	912	0.45	4.5845	4.31	0.42305594
 905	906	0.45	4.5845	4.31	0.42305594
 905	912	0.45	4.5845	4.31	0.42305594
907	906	4.925	1.6	4.31	13.2667187
 907	908	0.3138	4.925	4.31	0.27461482
 907	912	4.925	1.6	4.31	13.2667187
 908	906	0.45	4.5845	4.31	0.42305594
 908					0.60110133
 908		0.45	4.5845	4.31	0.42305594
 909		0.45	4.5845	4.31	0.42305594
 909			2.25	4.31	0.60110133
 909				4.31	0.42305594
 910				4.31	0.42305594
 910		0.3138	2.25	4.31	0.60110133
 910		0.45	4.5845	4.31	0.42305594
 911	906				
 911					

	PCB BOAF	RD TO RAIL	CONDUC	TANCES		
	· · · · · ·					1
	FROM	ТО	AREA	LENGTH	k	Conductance
BOTTOM PAIL TO	921	901	0.0625	4.6	4.31	0.058559783
EPS HOUSING (+Y)	921	907	0.0625	4.6	4.31	0.058559783
	921	902	0.587	0.225	4.31	11.24431111
	921	903	0.587	0.225	4.31	11.24431111
	921	904	0.587	0.225	4.31	11.24431111
	921	905	0.587	0.225	4.31	11.24431111
	921	<b>- 9</b> 06	2.25	2.25	4.31	4.31
MIDDLE RAIL TO	922		0.09375	4.6	4.31	0.087839674
EPS HOUSING (+Y)	922	907	0.09375	4.6	4.31	0.087839674
	922	902	0.881	0.225	4.31	16.87604444
	922	903	0.881	0.225	4.31	16.87604444
	922	904	0.881	0.225	4.31	16.87604444
	922	905	0.881	0.225	4.31	16.87604444
TOP RAIL TO	923	901	0.04975	4.6	4.31	0.046613587
EPS HOUSING (+Y)	923	907	0.04975	4.6	4.31	0.046613587
	923	902	0.4279	0.225	4.31	8.196662222
100000000000000000000000000000000000000	923	903	0.4677	0.225	4.31	8.959053333
	923	904	0.4677	0.225	4.31	8.959053333
	923	905	0.4279	0.225	4.31	8.196662222
	923	906	1.791	2.25	4.31	3.43076
BOTTOM RAIL TO	924	901	0.0625	4.6	4.31	0.058559783
EPS HOUSING (-Y)	924	907	0.0625	4.6	4.31	0.058559783
	924	908	0.5875	0.225	4.31	11.25388889
	924	909	0.5875	0.225	4.31	11.25388889
	924	910	0.587	0.225	4.31	11.24431111
	924	911	0.5875	0.225	4.31	11.25388889
	924	912	2.25	2.25	4.31	4.31
MIDDLE RAIL TO	925	901	0.09375	4.6	4.31	0.087839674
EPS HOUSING (-Y)	925	907	0.09375	4.6	4.31	0.087839674
	925	908	0.881	0.225	4.31	16.87604444
	925	909	0.881	0.225	4.31	16.87604444
	925	<b>9</b> 10	0.881	0.225	4.31	16.87604444
	925	911	0.881	0.225	4.31	16.87604444
TOP RAIL TO	926	901	0.04975	4.6	4.31	0.046613587
EPS HOUSING (-Y)	926	907	0.04975	4.6	4.31	0.046613587
	926	908	0.4279	0.225	4.31	8.196662222
	926	<b>9</b> 09	0.4677	0.225	4.31	8.959053333
	926	910	0.4677	0.225	4.31	8.959053333
	926	911	0.4279	0.225	4.31	8.196662222
	926	912	1.791	2.25	4.31	3.43076

				PCB TO PAILINGS	MILINGS							
	FROM	70	A1,2	17	7	k-Cu/knol k	k-A1	-V	94	27		
BOTTOM	1601	924		0.00067	0.125	1 4 40	431	2.70	اد		7	<u> </u>
PCB	1602	924	0	0.00067	0.125	965	7.31	0.70		[		- 1
THRMAL	1603	924			0 125	20.0	A 24	0.70		5617.164		1.328238
LAYER	1604	924	0.3		0125	20.0	4.01	0.70		4047.239		0.957013
<b>T</b> 0	. 1605	924	0.1		0.125	0.00	5.5	0.70		_]_	11.30	1.117082
BOTTOM	1606	924	0.6		0.125	0.03	4.01	3.78		1		0.425717
PAIL	1617	920			0.123	6.00	4.3	3.78			21.55	2.128587
	1801	120		- }	0.125	9.65	4.31	3.78	0.945	3600.746	8.62	0.851435
	444	35	0.25		0.125	9.65	4.31	3.78	0.945	3600.746	8.62	0.851435
	4 0 4	921			0.125	9.65	4.31	3.78	1.4742	5617.164	13.4472	1 328238
	0.00	921			0.125	9.65	4.31	3.78	2.30202	8771.418	20.99832	2.074095
	0 0	921		-	0.125	9.65	4.31	3.78	2.835	ı	25.86	2 554304
	/191	921		ı	0.125	9.65	4.31	3.78		1	8 62	0 851 A25
BOLIOM	1101	925		0.00967	0.1875	0.2	4.31	0.242		5 170631	5 746867	0.001400
PCB POLY	1102	925		0.00967	0.1875	0.2	4.31	0.242	0	A DERIBA	27.4000	0.039104
LAYER	1103	925		0.00967	0.1875	0.2	4.31	0.242	0	5811789	6 450252	0.036320
0	1104	925			0.1875	0.2	4.31	0.242		6 783868	7 539627	0.000050
MIDDLE	1105	925			0.1875	0.2	4.31	0.242	1	2 585315	2 873332	000000
RAIL	1106	925		0.00967	0.1875	0.2	4.31	0 242		12 0265B	14 26667	0.0033364
	1117	925		0.00967	0.1875	0.2	4.31	0 242		5 170621	E 746667	0.14730
	1101	922	0.25	0.00967	0.1875	0.2	4.31	0 242		5 170631	5 746667	0.009184
	1114	925		0.00967	0.1875	0.2	4.31	0.242	0	8 DE6184	2.740007 8 06.40	0.00000
	1115	922	-	0.00967	0.1875	0.2	4.31	0.242	0	12 59566	13 00888	0.036360
	1116	922	0.75		0.1875	0.2	4.31	0.242	1	15.51189	17.24	0177563
	1117	922		0.00967	0.1875	0.2	4.31	0.242		5 170631	5 746667	0.050184
10P PCB	601	925		ı	0.1875	9.65	4.31	3.78	-	4951 746	7 902816	1 115788
HEHMAL	602	925	0.468	0.00067	0.1875	9.65	4.31	3.78	-	6752 119	10 77815	1 521 460
LAYER	603	925	0.12	0.00067	0.1875	9.65	4.31	3.78	0 4725	1800 373	2 873333	0 405600
0	604	925	0	0.00067	0.1875	9.65	4.31	3.78	1 89	7201 403	11 70222	1 622720
MIDDLE	605	925	0.12	0.00067	0.1875	9.65	4.31	3.78	0.4725	1800.373	2 873333	0 405682
RAIL	909	925	0.687	0.00067	0.1875	9.65	4.31	3.78	2.59875	9902 052	15 80333	2 231251
	625	922	0.6875	0.00067	0.1875	9.65	4.31	3.78	2.59875	9902.052	15 80333	2 231251
	929	922	0.3438	0.00067	0.1875	9.65	4.31	3.78	1.299564	4951 746	7 902816	1 115788
	627	922:	0.3438	0.00067	0.1875	9.65	4.31	3.78	1.299564	4951.746	7.902816	1,115788

	628	922	0.3438	2900000	0.1875	9.65	4.31	3.78	3.78  1.299564  4951.746  7.902816  1.115788	4951 746	7 902816	1 1157AA	
	629	922	0.3438	0.00067	0.1875	9.65	4.31	3.78	1.299564	4951.746	7,902816	1115788	
	630	922	0.6875	0.00067	0.1875	9.65	4.31	3.78	2.59875	9902.052		2.231251	
OP PCB	101	926	0.3438	0.00967	0.0995	0.2	4.31	0.242	0.0832	7.110651		0.081786	
HERMAL	102	926	0.4688	0.00967	0.0995	0.2	4.31	0.242	0.11345	9.695967	20.30681	0.111522	
AYER	103	926	0.125	0.00967	0.0995	0.2	4.31	0.242	0.03025	2.585315	5.414573	0.029736	
0	104	926	0.5	0.00967	0.0995	0.2	4.31	0.242	0.121	10.34126		0.118944	
HDDLE	105	926	0.125	0.00967	0.0995	0.2	4.31	0.242	0.03025	2.585315	1	0.029736	
RAIL	106	926	0.6875	0.00967	0.0995	0.2	4.31	0.242	0.166375	14.21923	29.78015	0.163548	
	125	923	0.6875	0.00967	0.0995	0.2	4.31	0.242	0.166375		29.78015	0.163548	
	126	923	0.3438	0.00967	0.0995	0.2	4.31	0.242	0.0832		14.89224	0.081786	
	127	923	0.3438	0.00967	0.0995	0.2	4.31	0.242	0.0832	0.0832 7.110651	14.89224	0.081786	•
	128	923	0.3438	0.00967	0.0995	0.2	4.31	0.242	0.0832	7.110651	14.89224	0.081786	
	129	923	0.3438	0.00967	0.0995	0.2	4.31	0.242		7.110651	14.89224	0.081786	
	130	923	0.6875	0.00967	0.0995	0.2	4.31	0.242	0.166375 1421923	14 21923	29 78015	0 163548	

	TOP PCB	THERMAL	AYER NO	TOP PCB THERMAL LAYER NODE TO NODE		
	FROM	70	AREA	LENGTH k		Conductance
APPLIES TO LAYERS	601	602	0.003183	1.625	9.65	0.018902123
4XX AND 2XX	109	209	0.00184	2.625	9.65	0.00676419
	602	603	0.003183	1.1875	9.65	0.025866063
•	602	809	0.02513	2.625	9.65	0.092382667
	603	604	0.003138	1.25	9.65	0.02422536
	603	609	0.0007	2.625	9.65	0.002573333
	604	902	0.003183	1.25	9.65	0.02457276
	604	610	0.00268	2.625	9.65	0.00985219
	605	909	0.003138	2	9.65	0.018634892
	909	611	0.0007	2.625	9.65	0.002573333
	909	612	0.00369	2.625	9.65	0.013565143
	209	809	0.00385	1.625	9.65	
	209	613	0.00184	1.84375	9.65	
	809	609	0.00385	1.875	9.65	- 1
	809	613	0.0005	1.84375	9.65	0.002616949
	809	614	0.00184	1.84375	9.65	- 1
	809	615	0.00775	1.84375	9.65	0.0
	609	9 610	0.00385	1.25	9.65	- 1
	609	615	0.0007	1.84375	9.65	0.003663729
	910	611	0.00385	1.25	9.65	- 1
	, 610	0 615		1.84375	9.65	- 1
	610	0 616	3 0.00168	1.84375	9.65	
	611	612	9.00385	1.625	9.65	
	611	1 616	3 0.00168	1.84375	9.65	
	611	1 617	0.0005	5 1.84375	9.65	
	612	2 617	7 0.00134	1 1.84375	9.65	ļ
	612	5 618	3 0.00235	5 1.84375	9.65	0
	613	3 614			9.65	
	613	3 619	9 0.00235	D	9.65	
	614	4 615	5 0.00116		9.65	l
	614	4 620	0 0.00184	0	9.65	1
	615	5 616	6 0.00116	6 1.375	9.65	0.008141091

9.65 0.018322133	0.008141091	0.018939733	0.00716416	0.018939733	0.010293333	0.00876992	0.023409032	0.009965818	0.018328774	0.009965818	0.017731097	0.014145032	0.012913455	0.00876992	0.018328774	0.00996129	0.01068448	0.012141455	0.012141455	0.012141455	0.01068448
9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65
0.9375	1.375	0.9375	2	0.9375	0.9375	1.5625	0.96875	1.375	0.96875	1.375	0.96875	0.96875	1.375	1.5625	0.96875	0.96875	1.5625	1.375	1.375	1.375	1.5625
0.00178	0.00116	0.00184	0.00116	0.00184	0.001	0.00142	0.00235	0.00142	0.00184	0.00142	0.00178	0.00142	0.00184	0.00142	0.00184	0.001	0.00173	0.00173	0.00173	0.00173	0.00173
621	617	622	618	623	624	620	625	621	929	622	627	623	628	624	629	630	929	627	628	629	630
615	616	616	617	617	618	619	619	950	920	621	621	622	622	623	623	624	625	929	627	628	629
								•													

		2	J L L IMIDE		TOP PCB POLYIMIDE LAYER NODE TO NODE	COL
APPLIES TO LAYERS	FROM	5	AREA	LENGTH		CONDUCTANCE
3XX AND 1XX	501	505	2 0.04591	1.625	0.2	0.005650462
	501	202	7 0.02658	2.625	0.2	
	502	503	3 0.04591	1.1874	0.2	
	505	508	8 0.03624	2.625	0.2	0.002761143
	503		4 0.04591	1.25	0.2	0.0073456
	503	509	9 0.09665	2.625	0.2	0.00736381
	504	505	5 0.04591	1.25	0.5	0.0073456
	504	510	0 0.03866	2.625	0.2	
	505	206	6 0.04591	1.625	0.2	0
	505	511	1 0.09665	2.625	0.5	0.00736381
	506	512	2 0.05316		0.5	
	507		508 0.05557	1.625	0.5	
	507		513 0.02658	1.184375	0.2	
	508		509 0.05557	1.1875	0.5	
•	508		513 0.00725	1.184375	0.2	
	508		514 0.02658		0.2	
	508		515 0.00242	1.184375	0.2	0.0
	509		510 0.05557	1.25	0.2	
	509	-	515 0.09665	1.184375		0.0
	510		511 0.05557			
	510		515 0.0145	5 1.184375		
	510		0	3 1.184375		
	511	,				
	511		516 0.02416	3 1.184375		
	511		517 0.007249	1.184375		
	512		517 0.01933	3 1.184375		0
	512		518 0.033828	8 1.184375	0.2	2 0.00571238
	513		514 0.01576	6 1.562		
	513		519 0.03383	٥		
	514		515 0.015706	6 1.375		0.2 0.002284509
	514		520 0.02658	8 0.9375	0.	2
	515		516 0.015706		0	2 0.0
	515		521 0.02658	8 0.9375	0	2 0.0056704

516	217	517 0.015706	1.375	0.5	0.002284509
516	525	0.02658	0.9375	0.2	0.0056704
517	518	0.015706	1.5625	0.2	0.002010368
517	523	0.02658	0.9375	0.2	0.0056704
518	524	0.03383	0.9375	0.2	0.007217067
519	520	0.02054	1.5625	0.5	0.00262912
519	525	0.03383	0.96875	0.5	0.006984258
250	521	0.02054	1.375	0.5	0.002987636
. 520	929	0.02658	0.96875	0.2	0.005487484
521	525	0.02054	1.375	0.2	0.002987636
521	527	0.02658	0.96875	0.2	0.005487484
522	523	0.02054	1.375	0.2	0.002987636
255	528	0.02658	0.96875	0.2	0.005487484
523	524	0.02054	1.5625	0.2	0.00262912
523	529	0.02658	0.96875	0.2	0.005487484
524	530	0.03383	0.96875	0.2	0.006984258
525	526	0.01691	1.5625	0.2	0.00216448
929	527	0.01691	1.375	0.2	0.002459636
527	528	0.01691	1.375	0.2	0.002459636
528	529	0.01691	1.375	0.2	0.002459636
529	530	0.01691	1.5625	0.2	0.00216448

			_		OP PCB	AYERCO	TOP PCB LAYER CONDUCTANCES	CES					
APPLIES TO	FROM	ဍ	A1.2		_	2	r-Cu	k-paly	hc'	hc	K	SZ	δ 2
ALL TOP PCB	601	501		3.2656	0.00067	0.00967	9.65	0.2	0.1933	3 0.63124	974.806	67.54085	0.624995
LAYERS	602	505		4.4531	0.00067	0.00967	9.65	0.2	0.1933	3 0.860784	1329.284	92.10134	0.852267
	603	503		1.1875	0.00067	0.00967	9.65	0.2	0.1933	3 0.229544	6		0.227272
•	604	504	4	4.75	0.00067	0.00967	9.65	0.2	0.1933	3. 0.918175		98.24199	0.90909
	902	505	5	4.75	0.00067	0.00967	9.65	5 0.2	0.1933	3 0.918175	1417.91	98.24199	60606.0
	909	506	9	6.531	0.00067	0.00967	9.65	5 0.2	0.1933		1949.552	135.0776	1.249951
	209	50	10	3.953	0.00067	0.00967	9.65	5 0.2	0.1933	3 0.764115	5 1180	81.75801	0.756554
	809	508	8	5.391	0.00067	0.00967	9.65	5 0.2	0.1933	3 1.04208	3 1609.254	111.4995	1.031769
	609	50	509	1.4375	0.00067	0.00967	9.65	5 0.2	0.1933	3 0.277869			
	610	51	510	5.75	0.00067	0.00967	9.65	5 0.2	0.1933	3 1.111475	5 1716.418		
	611	511	=	5.75	0.00067	0.00967	9.65	5 0.2	0.1933	₹.	5 1716.418	-	
	612	5	512	7.906	0.00067	0.00967	9.65	5 0.2	0.1933	3 1.52823	3 2360		
	613	5.	513	1.421	0.00067	0.00967	9.65	5 0.2	0.1933		9 424.1791		9
-	614	5	514	1.117	0.00067	0.00967	9.65	5 0.2			-		
	615	5.	515	1.117	0.00067	0.00967	9.65	5 0.2		ł			
	616		516	1.117	0.00067	0.00967	9.65	5 0.2	0.1933	13 0.215916			
	617		517	1.117	0.00067	0.00967	7 9.65					_	_
	618		80	1.421	0.00067	0.00967	9.65	5 0.2	0.1933	- 1			_
	619		519	1.859	0.00067	0.00967	9.65	5 0.2	0.1933				_
	620		520	1.461	0.00067	0.00967	9.65	,	0.1933	33 0.282411			_
	621		521	1.461	0.00067	0.00967	7 9.65	5 0.2	0.1933			_	$\dashv$
	622		522	1.461	0.00067	0.00967	7 9.65	5 0.2				1	
	623		523	1.461	0.00067	0.00967	7 9.65	5 0.2	2 0.1933	33 0.282411	_		_
	624		524	1.859	0.00067	0.00967	7 9.65	5 0.2	2 0.1933	33: 0.359345		_	_
	625		25	1.531	0.00067	0.00967	7 9.65	5 0.2	2 0.1933	0		_	
	626		526	1.203	0.00067	. 0.00967	7 9.65	5 0.2	2 0.1933	33: 0.23254			_
	627		527	1.203	0.00067	0.00967	7 9.65	5 0.2			_		
	628		528	1.203	0.00067	0.00967	7 9.65	5 0.2			$\Box$		_
	629		529	1.203	0.00067	0.00967	7 9.65	5 0.2	2 0.1933		359.1045		
	630		530	1.531	0.00067	0.00967	7 9.65	5 0.2	2 0.1933	33 0.295942	12 457.0149	91 31.66494	1 0.293014

				ВОТТОМ	PCB THER	BOTTOM PCB THERMAL LAYER NODE TO NODE
	_	5	AREA	LENGTH	<i>ي</i> د	CONDUCTANCE
APPLIES TO LAYERS	1601	1602	0.00402	1.281	0.5	0.000627635
4XX AND 2XX	1601	1607	0.00201	1.281	0.5	0.000313817
	1601	1614	0.00469	1.281	0.2	0.00073224
•	1602	1603	0.00402	1.3438	0.2	0.000598303
	1602	1607	0.00294	2.25	0.2	0.000261333
	1603	1604	0.00402	1.2188	0.5	0.000659665
	1603	1608	0.00151	2.25	0.2	0.000134222
	1604	1605	0.00402	906.0	0.2	0.000887417
	1604	1609	0.00059	2.25		5.2444E-05
	1604	1610	0.0005	2.25		4.4444E-05
	1604	1611	0.00067	2.25		5.95556E-05
	1605	1606	0.00402	1.5	0.2	0.000536
	1605	1612	0.00059	2.25		5.2444E-05
	1606	1617	0.00402	1.75		
	1606	1613	0.00335	2.25	0.2	0.000297778
	1607	1608	0.00201	1.3438	0.2	
	1607	1614	0.002094	2.25		0.000186133
	1608	1609		1.438	0.5	0.000279555
	1608	1615	0.001508	2.25	0.2	
	1609	1610	0.00201	0.406	0.5	0.000990148
	1609	1615		2.25	0.5	
	1610	1611	0.00201	0.438	0.5	0.000917808
	1610	1615	0.0005	2.25	0.5	4.4444E-05
	1611	1612	0.00201	0.5	0.2	0.000804
	1611			2.25	0.5	5.95556E-05
	1612	1613	0.00201	1.5	0.5	0.000268
	1612	1616			0.2	5.9555E-05
	1613	1617		1.75	0.5	0.000382857
	1613	1616	0.00469	2.5	0.5	0.0003752
	1614	1615		2	0.2	
	1615	1616		2.719		0.00034498
	1616	1617	0.00469	2	0.2	0.000469

		BOTTOM	PCB POLY	BOTTOM PCB POLY LAYER NODE TO NODE	E TO N	ODE	
APPLIES TO LAYERS	FROM	10	AREA	LENGTH k		8	CONDUCTANCE
13× TO 11×	1501	1502	0.058	1.281	0	0.2	0.009055425
	1501	1507	0,029	1.281	0	0.2	0.004527713
	1501	1514	0.0677	1.281	0	0.2	0.010569867
	1502	1503	0.058	1.344	0	0.2	0.008630952
	1502	1507	0,0302	2.25	0	0.2	0.002684444
	1503	1504	0.058	1.219	0	0.2	0.009515997
	1503	1508	0.0217	2.25	0	0.2	0.001928889
	1504	1505	0.058	906:0		0.2	0.012803532
	1504	1509	0.00846	2.25	0	0,2	0.000752
	1504	1510	0.00725	2.25	3	0.2	0.00064444
	1504	1511	0.00987	2.25	٥	0.2	0.000859556
	1505	1506		1.5		3.2	0.007733333
	1505	1512	0.00967	2.25		0.2	0.000859556
	1506	1517	0.058	1.75		0.2	0.006628571
***	1506	1513	0.0483	2.25		0.2	0.004293333
	1507	1508	0.029	1.344		5.2	0.004315476
	1507	1514	0.0302	2.5		0.2	0.002416
	1508	1509		1.		0.2	0.00403338
	1508	1515	0.029	2.5		0.2	0.00232
	1509	1510		0.4		0.2	0.014285714
	1509	1515	0.00864	2.5		0.2	0.0006912
	1510	1511	0.029	0.438		2.0	0.013242009
-	1510		0.00725			0.2	0.00058
	1511		0.029			0.2	0.0116
	1511	1515	5 0.00967			0.2 ∠.2	0.0007736
	1512	1513	3 0.029	1.5		0.2	0.003866667
	1512	1516	3 0.00967	2.5		0.2	0.0007736
	1513	1517	7 0.029	1,75		0.2	0.003314286
	1513	1516		3 2.5		0.2	0.003864
	(1514				Contract of the Contract of th	0.2	0.00677
	1515		100	2.71		0.2	0,004979772
	1516	1517	7 0.0677	2		0.2	0.00677

				BOTTOM	PCB LAYER	BOTTOM PCB LAYER CONDUCTANCES	TANCES					
LAYERS	FROM	10	A1.2	<b>♂</b>	L-poly	k-Cu	k-poly	hc.	hc	X	<b>2</b> 2	¥0
16XX TO 15XX	1601	1501	80	0.00067	0.00967	9.65	0.2	0.1933	1.5464	115223.9	165.4602	1.532061
	1602	1502	4.688	0.00067	0.00967	9.65	0.5	0.1933	0.90619	67521.19	96.95967	0.897788
APPLIES TO	1603	1503	3.375	0.00067	0.00967	9.65	0.2	0.1933	0.652388	48610.07	69.80352	0.646338
ALL LAYER .	1604	1504	3.938	0.00067	0.00967	9.65	0.2	0.1933	0.761215	56718.96	81.44778	0.754157
TO LAYER	1605	1505	1.5	0.00067	0.00967	9.65	0.2	0.1933	0.28995	21604.48	31.02378	0.287261
CONDUCTANCES	1606	1506	7.5	0.00067	0.00967	9.65	0.2	0.1933	1.44975	108022.4	155.1189	1.436307
	1607	1507	2.344	0.00067	0.00967	9.65	0.5	0.1933	0.453095	33760.6	48.47983	0.448894
	1608	1508	1.688	0.00067	0.00967	9.65	0.2	0.1933	0.32629	24312.24	34.9121	0.323265
	1609	1509	0.6536	0.00067	0.00967	9.65	0.5	0.1933	0.126341	9413.791	13.5181	0.125169
	1610	1510	0.5	0.00067	0.00967	9.65	0.5	0.1933	0.108635	8094.478	11.62358	0.107627
	1611	1511	0.75	0.00067	0.00967	9.65	0.5	0.1933	0.144975	10802.24	15.51189	0.143631
	1612	1512	0.75	0.00067	0.00967	9.65	0.5	0.1933	0.144975	10802.24	15.51189	0.143631
	1613	1513	3.75	0.00067	0.00967	9.65	0.2	0.1933	0.724875	54011.19	77.55946	0.718153
•	1614	1514	5.471	0.00067	0.00967	9.65	0.5	0.1933	1.057544	78798.73	113,1541	1.047738
	1615	1515	8.531	0.00067	0.00967	9.65	0.5	0.1933	1.649042	122871.9	176.4426	1.633751
	1616	1516	10.5	0.00067	0.00967	9.65	0.5	0.1933	2.02965	151231.3	217.1665	2.01083
	1617	1517	æ	0.00067	0.00967	9.65	0.2	0.1933	1.5464	115223.9	165.4602	1.532061

8	0.000296	0.000296	0.000296	0.000197	0.000197	0.000197	0.000296	0.000296	0.000296	0.000197	0.000197	0.000197	0.000296	0.000296	0.000296	0.000197	0.000197	0.000197	0.000296	0.000296	0.000296	0.000198	0.000198	0.000198	0.000296	0.000296	0.000296	_1	1.			- 1	0.000296
-			0.001632	0.005365	0.005365	0.005365	0.001632	0.001632	0.001632	0.005365	0.005365	0.005365	0.001632	0.001632	0.001632	0.005365	0.005365			_1						. 1.	İ.					- 1	0.001632
	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
1.2	0.000362	0.000362	0.000362	0.000205	0.000205	0.000205	0.000362	0.000362	0.000362	0.000205	0.000205	0.000205	0.000362	0.000362	0.000362	0.000205	0.000205	0.000205	0.000362	0.000362	0.000362	0.000205	0.000205	0.000205	0.000362	0.000362	0.000362	0.000205	0.000205	0.000205	0.000362	0.000362	0.000362
	0.1773 0	9.	0.1773 0	l	1	1.476 0	0.1773 0		0.1773	- 1	1.476 (	1.476 (	0.1773 (	0.1773 (	0.1773	1.476	1.476	1.476		0.1773	- 1		1.476	1.476	0.1773	0.1773	0.1773	1.476	1.476	1.476	0.1773	0.1773	0.1773
k (Cu/poly) hc'	0.2	0.2	0.2	9.65	9.65	9.65	0.2	0.2	0.2	9.65	9.65	9.65	0.5	0.2	0.5	9.65	9.65	9.65	0.5	0.5	0.2	9.65	9.65	9.65	0.5	0.2	0.5	9.65	9.65	9.65	0.5	0.2	0.2
K tot	1.313018	1.313018	1.313018	0.089465	0.089465	0.089465	5.033236	5.033236	5.033236	0.342951	0.342951	0.342951	0.875345	0.875345	0.875345	0.059644	0.059644	0.059644	5.470909	5.470909	5.470909	0.372773		0.372773	0.656509	0.656509	0.656509	0.044733	0.044733	0.044733	5.470909	5.470909	1 5.470909
F.	4.569624	4.569624	4.569624	67.06499	67.06499	67.06499	4.569624	4.569624	4.569624	6490.79	67.06499	67.06499	4.569624	4.569624	4.569624	67.06499	67.06499	67.06499	4.569624	4.569624	4.569624	67.06499	67.06499	67.06499	4.569624	4.569624	4.569624	67.06499	67.06499	67.06499	4.569624	4.569624	4.569624
Σ.	0.218836	0.218836	0.218836	0.014911	0.014911	0.014911	0.218836	0.218836	0.218836	0.014911	0.014911	0.014911	0.218836	0.218836	0.218836	0.014911	0.014911	0.014911	0.218836	0.218836	0.218836	0.014911	0.014911	0.014911	0.218836	0.218836	0.218836	0.014911	0.014911	0.014911	0.218836	0.218836	0.218836
	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165
17	1.77	1.77	1.77	1.77	1.77	1.77	171	1.77	1.77	1.77	1.77	1.77	1.77	1.71	1.77	1.71	1771	1.77	1.11	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77
AREA k-Ni	204	0.00204	0.00204	0.000139	0.000139	0.000139	0 00204	0.00204	0.00204	0.000139	0.000139	0.000139	0.00204	0.00204	0.00204	0.000139	0.000139	0.000139	0.00204	0.00204	0.00204	10	0.000139	1	1			10	1	1			_
	101	301	201	-	↓_	109	102	302	205	202	402	602	103	303	503	203	403	603	104	304	504	204	404	604	105	305	505	205	405	605	106	306	506
FROM TO	011	2013	2015	2012	2014	2016	2021	2023	2025	2022	2024	2026	2031	2033	2035	2032	203	2036	2041	2043	2045	2042	2044	2046	2051	2053	2055	2052	2054	2056	2061	2063	2065

2251	125	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2253	325	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2255	525	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2252	225	0.000139	1.77	0.0165	0.014911	6490.79	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2254	425	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2256	625	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2261	126	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.5	0.1773	0.000362	0.25	0.001632	0.000296
2263	326	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.5	0.1773	0.000362	0.25	0.001632	0.000296
2265	. 526	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.5	0.1773	0.000362	0.25	0.001632	0.000296
2262	226	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2264	426	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2266	929	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2271	127	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2273	327	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2275	527	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2272	227	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2274	427	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2276	627	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
. 2281	128	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2283	328	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2285	528	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2282	228	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2284	428	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2286	628	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2291	129	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2293	329	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2295	529	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2532	229	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2294	429	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2296	629	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2301	130	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2303	330	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2305	530	0.00204	1.77	0.0165	0.218836	4.569624	1.313018	0.2	0.1773	0.000362	0.25	0.001632	0.000296
2302	230	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2304	430	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197
2306	630	0.000139	1.77	0.0165	0.014911	67.06499	0.089465	9.65	1.476	0.000205	0.25	0.005365	0.000197

צ
3000
0.025 0.01632
0.025
0.025
0.025
0.025
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1-1-1-1
0.1
14.00553 14.00553 9.542982 9.542982 7.440436
4.569624 14 6.706499 9.5 6.706499 9.5 6.706499 9.5 6.706499 9.5 4.569624 7.4
0.218836 4.56 0.218836 4.56 0.149109 6.7 0.149109 6.7 0.218836 4.5
0.0165 0.21 0.0165 0.21 0.0165 0.14 0.0165 0.14 0.0165 0.21
1.77
0.00204
$\perp$

3154	1415	0.00139	1.77	0.0165	0.149109	6.706499	14.91091	9.65	1.476	0.002052	0.025	0.53654	0.53654 0.002044
3156	1615	0.00139	1.77	0.0165	0.149109	6.706499	14.91091	9.65	1.476	0.002052	0.025	0.53654	0.002044
3161	1116	0.00204	1.77	0.0165	0.218836	4.569624	24.94735	0.2	0.1773	0.000362	0.025	0.01632	0.000354
3163	1316	0.00204	1.77	0.0165	0.218836	4.569624	24.94735	0.2	0.1773	0.000362	0.025	0.01632	0.000354
3165	1516	0.00204	1.77	0.0165	0.218836	4.569624	24.94735	0.2	0.1773	0.000362	0.025	0.01632	0.000354
3162	1216	0.00139	1.77	0.0165	0.149109	6.706499	16.99844	9.65	1.476	0.002052	0.025	0.53654	0.002044
3164	1416	0.00139	1.77	0.0165	0.149109	6.706499	16.99844	9.65	1.476	0.002052	0.025	0.53654	0.002044
3166	1616	0.00139	1.77	0.0165	0.149109	6.706499	16.99844	9.65	1.476	0.002052	0.025	0.53654	0.002044
3171	. 1117	0.00204	1.77	0.0165	0.218836	4.569624	5.470909	0.2	0.1773	0.000362	0.025	0.01632	0.000354
3173	1317	0.00204	1.77	0.0165	0.218836	4.569624	5.470909	0.2	0.1773	0.000362	0.025	0.01632	0.000354
3175	1517	0.00204	1.77	0.0165	0.218836	4.569624	5.470909	0.2	0.1773	0.000362	0.025	0.01632	0.000354
3172	1217	0.00139	1.77	0.0165	0.149109	6.706499	3.727727	9.65	1.476	0.002052	0.025	0.53654	0.002043
3174	1417	0.00139	1.77	0.0165	0.149109	6.706499	3.727727	9.65	1.476	0.002052	0.025	0.53654	0.002043
3176	1617	0.00139	1.77	0.0165	0.149109	6.706499	3.727727	9.65	1.476	0.002052	0.025	0.53654	0.002043

					_	177 0 146401	0.11010	77 0 1 45 401	0. 4040	1 77 0 1 AEADS	0.140401	177 0 140 404	0.140481	1 77 0 1 ACABA
						1 77		177	1.1.1	177		4 77	1.7.1	177
				FNCTH		0.06201	0.000	0 237705	0.103.0	0.04134	0.0.0	0 25827E	0.430013	0.031005
				ADJAREA JENGTH		0.0051318		0.0196719 0.237705		0.0034212		0.0213825 0.258275	2000	3 0.0008553 0.0025659 0.031005
	TANCES			AREA		6 0.0008553		23 0.0008553		4 0.0008553		25 0.0008553		0.0008553
	PIN TO PIN CONDUCTANCES			# OF PINS AREA										
	PIN TO PI			0	2012		0000	7707	2000	2032		7507	0200	7507
-				THOM	2011	1107	2004	1707	2021	1007	1100	2041	- 30E -	1007

## APPENDIX M. ITAS CONDUCTANCE DATA

```
Cond. Value L/R Description
 SqNo FACTOR From
                   TO
                                       L GEOMETRY TO HOUSING NODE
                   901
                          1000
    1 1
                                          GEOMETRY TO HOUSING NODE
                          1000
                                       L
                   902
             2
    2 1
                                          GEOMETRY TO HOUSING NODE
                          1000
             3
                   903
    3 1
L GEOMETRY TO HOUSING NODE L GEOMETRY TO HOUSING NODE
                          1000
             ā
                   904
    4 1
1000
                   905
             5
П
                                       L GEOMETRY TO HOUSING NODE
                          1000
                   906
             6
    6 1
                                      L GEOMETRY TO HOUSING NODE
                          1000
                   907
    7 1
П
                                      L GEOMETRY TO HOUSING NODE
                   908
                          1000
             В
    8
                                      L GEOMETRY TO HOUSING NODE
                          1000
                   909
D
    9 1
                                       L GEOMETRY TO HOUSING NODE
                   910
                          1000
   10 1
            10
                          1000
L GEOMETRY TO HOUSING NODE
                   911
            11
   11 1
77
                                      L GEOMETRY TO HOUSING NODE
                          1000
                   912
            12
   12 1
                                      L GEOMETRY TO PCB1 THERMAL LAYER
                          1000
            13
                   613
   13 1
L GEOMETRY TO PCB1 THERMAL LAYER
                   614
             14
   14 1
п
                                      L GEOMETRY TO PCB1 THERMAL LAYER
                   615
                          1000
            15
   15 1
                                       L GEOMETRY TO PCB1 THERMAL LAYER
                          1000
                   616
            16
   16 1
                                       L GEOMETRY TO PCB1 THERMAL LAYER
                   617
                          1000
             17
   17 1
                                       L GEOMETRY TO PCB1 THERMAL LAYER
                   618
                          1000
   18 1
             1.8
CTRL-FlImport ITAS_NC ALT-F3AutoMLI
SHFT-FlImport Column Shift-F3AutoCHT
                                                              PgDn PgUp Home
                                      UDC Allowed
                                      Shift-F5Del/Pur
                                                                    End
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit £
                          Cond. Value L/R Description
m SqNo FACTOR From
                   To
                                       L GEOMETRY TO PCB1 THERMAL LAYER
                   619
                          1000
             19
   19 1
L GEOMETRY TO PCB1 THERMAL LAYER
                          1000
   20 1
             20
                   620
                                       L GEOMETRY TO PCB1 THERMAL LAYER
                   621
                          1000
   21 1
             21
                                       L GEOMETRY TO PCB1 THERMAL LAYER
                          1000
   22 1
             22
                   622
                                      L GEOMETRY TO PCB1 THERMAL LAYER
                   623
                          1000
   23 1
             23
п
                                      L GEOMETRY TO PCB1 THERMAL LAYER
                          1000
             24
                   624
24 1
                                      L GEOMETRY TO PCB1 THERMAL LAYER
             25
                   625
                          1000
   25 1
L GEOMETRY TO PCB1 THERMAL LAYER
             26
                   626
                          1000
   26 1
D
                          1000
                                      L GEOMETRY TO PCB1 THERMAL LAYER
   27 1
             27
                   627
                                      L GEOMETRY TO PCB1 THERMAL LAYER L GEOMETRY TO PCB1 THERMAL LAYER
                   628
                          1000
   28 1
1000
             29
                   629
29 1
                          1000
                                      L GEOMETRY TO PCB1 THERMAL LAYER
    30 1
             30
                   630
L GEOMETRY TO TOP PCB THERMAL LAYER D
                   601
                          1000
             31
   31 1
L GEOMETRY TO TOP PCB THERMAL LAYER D
                          1000
1000
                   602
    32 1
             32
                                      L GEOMETRY TO TOP PCB THERMAL LAYER D
                   603
   33 1
             33
77
                                       L GEOMETRY TO TOP PCB THERMAL LAYER D
                   604
                          1000
D
    34 1
             34
                                       L GEOMETRY TO TOP PCB THERMAL LAYER D
L GEOMETRY TO TOP PCB THERMAL LAYER D
                          1000
             35
                   605
    35 1
                   606
                          1000
             36
    36 1
PgDn PgUp Home
CTRL-F1Import ITAS_NC ALT-F3AutoMLI
                                      UDC Allowed
                                      Shift-F5Del/Pur
                                                                    End
SHFT-F1Import Column Shift-F3AutoCHT
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëë ESC:Quit f
□ SqNo FACTOR From
                     To
                            Cond. Value L/R Description
     1 1
                     901
                            1000
                                             GEOMETRY TO HOUSING NODE
              1
                                          T.
                     902
-
     2 1
              2
                            1000
                                             GEOMETRY TO HOUSING NODE
                     903
D
     3 1
              3
                            1000
                                             GEOMETRY TO HOUSING NODE
                                             GEOMETRY TO HOUSING NODE
                     904
     4 1
\mathbf{n}
                            1000
     5 1
                     905
                                          L GEOMETRY TO HOUSING NODE
                            1000
     6 1
              6
                     906
                                          L GEOMETRY TO HOUSING NODE
1000
                                         L GEOMETRY TO HOUSING NODE L GEOMETRY TO HOUSING NODE
     7 1
              7
                     907
                            1000
п
р
     8 1
              8
                     908
                            1000
                                                                                n
     9 1
              9
                     909
                           1000
                                         L GEOMETRY TO HOUSING NODE
                                                                               n
    10 1
              10
                     910
                                         L GEOMETRY TO HOUSING NODE
п
                            1000
                                         L GEOMETRY TO HOUSING NODE L GEOMETRY TO HOUSING NODE
11 1
              11
                     911
                            1000
                                                                               n
    12 1
              12
                     912
                           1000
                                                                               п
              13
п
    13 1
                     613
                            1000
                                         L GEOMETRY TO PCB1 THERMAL LAYER
                                         L GEOMETRY TO PCB1 THERMAL LAYER
L GEOMETRY TO PCB1 THERMAL LAYER
n
    14
       1
              14
                     614
                            1000
    15 1
              15
                     615
                            1000
р
    16 1
              16
                     616
                            1000
                                         L GEOMETRY TO PCB1 THERMAL LAYER
E
D
    17 1
              17
                     617
                            1000
                                          L GEOMETRY TO PCB1 THERMAL LAYER
    18 1
              18
                                          L GEOMETRY TO PCB1 THERMAL LAYER
618
                            1000
                                                                               п
CTRL-Flimport ITAS NC
                        ALT-F3AutoMLI UDC Allowed
                                                                  PgDn PgUp Home
SHFT-Flimport Column
                       Shift-F3AutoCHT
                                         Shift-F5Del/Pur
                                                                        End
     F1Save/Purge
                      F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit £
                                                                               D
□ SqNo FACTOR From
                     To
                            Cond. Value L/R Description
19 1
              19
                     619
                            1000
                                          L GEOMETRY TO PCB1 THERMAL LAYER
                                                                               c
    20 1
              20
                     620
                            1000
                                            GEOMETRY TO PCB1 THERMAL LAYER
c
    21 1
              21
                     621
                            1000
                                             GEOMETRY TO PCB1 THERMAL LAYER
                                                                               n
                                         L GEOMETRY TO PCB1 THERMAL LAYER
    22 1
              22
                    622
                            1000
                                                                               23 1
              23
                    623
                            1000
                                         L GEOMETRY TO PCB1 THERMAL LAYER
              24
                    624
                            1000
                                         L GEOMETRY TO PCB1 THERMAL LAYER
    25 1
              25
                                         L GEOMETRY TO PCB1 THERMAL LAYER
b
                     625
                            1000
    26 1
              26
                     626
                            1000
                                         L GEOMETRY TO PCB1 THERMAL LAYER
    27 1
              27
627
                            1000
                                         L GEOMETRY TO PCB1 THERMAL LAYER
28
              28
                     628
                            1000
                                         L GEOMETRY TO PCB1 THERMAL LAYER
b
    29 1
              29
                     629
                            1000
                                         L GEOMETRY TO PCB1 THERMAL LAYER
                                                                               D
    30 1
             30
                     630
                            1000
                                         L GEOMETRY TO PCB1 THERMAL LAYER
b
    31 1
             31
                     601
                            1000
                                         L GEOMETRY TO TOP PCB THERMAL LAYER D
                                         L GEOMETRY TO TOP PCB THERMAL LAYER D
L GEOMETRY TO TOP PCB THERMAL LAYER D
32 1
              32
                     602
                            1000
    33 1
33
                     603
                            1000
    34 1
              34
                     604
                                         L GEOMETRY TO TOP PCB THERMAL LAYER D
                            1000
р
    35 1
              35
                            1000
                                         L GEOMETRY TO TOP PCB THERMAL LAYER D
L GEOMETRY TO TOP PCB THERMAL LAYER D
                     605
77
    36 1
              36
                     606
                            1000
CTRL-Flimport ITAS_NC
                        ALT-F3AutoMLI UDC Allowed
                                                                 PgDn PgUp Home
SHFT-FlImport Column
                      Shift-F3AutoCHT
                                         Shift-F5Del/Pur
                                                                        End
    FlSave/Purge
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                              Cond. Value L/R Description
g SqNo FACTOR From
                      TO
                                             L GEOMETRY TO TOP PCB THERMAL LAYER m
                              1000
               37
                      607
    37 1
п
                                             L GEOMETRY TO TOP PCB THERMAL LAYER D
                              1000
    38 1
               38
                       608
                                             L GEOMETRY TO TOP PCB THERMAL LAYER B
               39
                      609
                              1000
    39
                                             L GEOMETRY TO TOP PCB THERMAL LAYER D
               40
                      610
                              1000
                                             L GEOMETRY TO TOP PCB THERMAL LAYER B
                      611
                              1000
               41
п
    41 1
                                            L GEOMETRY TO TOP PCB THERMAL LAYER D
                      612
                              1000
    42 1
               42
                                             L GEOMETRY TO BOTTOM PCB THERMA LYR D
L GEOMETRY TO BOTTOM PCB THERMA LYR D
                      1601
                              1000
    43 1
               43
Ū
                      1602
                              1000
              44
    44 1
                                            L GEOMETRY TO BOTTOM PCB THERMA LYR D
                              1000
               45
                      1603
    45 1
L GEOMETRY TO BOTTOM PCB THERMA LYR D
                      1604
                              1000
    46 1
               46
n
                                            L GEOMETRY TO BOTTOM PCB THERMA LYR D
L GEOMETRY TO BOTTOM PCB THERMA LYR D
                              1000
               47
                      1605
    47 1
1606
                              1000
               48
    48 1
                                            L GEOMETRY TO BOTTOM PCB THERMA LYR D
                              1000
    49 1
               49
                      1607
ш
                                            L GEOMETRY TO BOTTOM PCB THERMA LYR D
                      1608
                              1000
               50
D
    50 1
                                             L GEOMETRY TO BOTTOM PCB THERMA LYR D
                      1609
                              1000
               51
    51 1
                                             L GEOMETRY TO BOTTOM PCB THERMA LYR D
                       1610
                              1000
               52
D
    52 1
                                             L GEOMETRY TO BOTTOM PCB THERMA LYR D
                              1000
               53
                      1611
    53 1
                                             L GEOMETRY TO BOTTOM PCB THERMA LYR D
               54
                      1612
                              1000
PgDn PgUp Home
                          ALT-F3AutoMLI UDC Allowed
CTRL-FlImport ITAS_NC
                                                                              End
SHFT-FlImport Column
                                            Shift-F5Del/Pur
                         Shift-F3AutoCHT
                        F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     F1Save/Purge
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit f
                              Cond. Value L/R Description
                      TO
 SqNo FACTOR From
                                             L GEOMETRY TO BOTTOM PCB THERMA LYR E
               55
                       1613
                              1000
Б
    55 1
                                             E GEOMETRY TO BOTTOM PCB THERMA LYR D
                       1614
                              1000
    56 1
               56
                                             L GEOMETRY TO BOTTOM PCB THERMA LYR =
                              1000
               57
                       1615
                                             L GEOMETRY TO BOTTOM PCB THERMA LYR E
                              1000
               58
                       1616
Б
    58 1
                                             L GEOMETRY TO BOTTOM PCB THERMA LYR =
                              1000
               59
                       1617
                                       L EQUIPMENT PLATE TO EPS HOUSING L HOUSING NODES TO HOUSING NODES L HOUSING NODES TO HOUSING NODES
                              178.47
                       912
    60 1
               913
                      905
                              .26135
    61 1
               901
               901
                       906
                              1.5333
                                           L HOUSING NODES TO HOUSING NODES
L HOUSING NODES TO HOUSING NODES
L HOUSING NODES TO HOUSING NODES
L HOUSING NODES TO HOUSING NODES
L HOUSING NODES TO HOUSING NODES
L HOUSING NODES TO HOUSING NODES
L HOUSING NODES TO HOUSING NODES
L HOUSING NODES TO HOUSING NODES
    62 1
.27461
                       911
63 1
               901
               901
                       912
                              1.3563
                              .60110
                       903
               902
65 1
                              .42339
               902
                       906
66
                              .27461
                       907
               902
    67 1
.42306
               902
                       912
                       904
                              .60110
               903
    69 1
.42306
                                            L HOUSING NODES TO HOUSING NODES
                       906
    70 1
               903
                                            L HOUSING NODES TO HOUSING NODES
L HOUSING NODES TO HOUSING NODES
                              .42306
    71 1
               903
                       912
                      905
                              .60110
               904
    72 1
PgDn PgUp Home
CTRL-Flimport ITAS_NC ALT-F3AutoMLI
                                             UDC Allowed
                                             Shift-F5Del/Pur
                                                                               End
SHFT-F1Import Column Shift-F3AutoCHT
                       F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     F1Save/Purge
```

```
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit £
                                        Cond. Value L/R Description
m SqNo FACTOR From
                               To
                                       .42306
                                                            L HOUSING TO HOUSING NODES
      73 1
                    904
                               906
п
      74 1
                     904
                               912
                                         .42306
                                                                  HOUSING TO HOUSING NODES
                                                              L HOUSING TO HOUSING NODES
      75 1
                     905
                               906
                                         .42306
L HOUSING TO HOUSING NODES
      76 1
                     905
                               912
                                         .42306
р
                                       13.2667
                                                            L HOUSING TO HOUSING NODES L HOUSING TO HOUSING NODES
                     907
      77 1
                               906
п
      78 1
                     907
                               908
                                         .27461
                                      13.2667 L HOUSING TO HOUSING NODES
.42306 L HOUSING TO HOUSING NODES
.60110 L HOUSING TO HOUSING NODES
.42306 L HOUSING TO HOUSING NODES
.42306 L HOUSING TO HOUSING NODES
.60110 L HOUSING TO HOUSING NODES
.42306 L HOUSING TO HOUSING NODES
.42306 L HOUSING TO HOUSING NODES
.60110 L HOUSING TO HOUSING NODES
.42306 L HOUSING TO HOUSING NODES
                                       13.2667
      79 1
                    907
                               912
                                                            L HOUSING TO HOUSING NODES
77
                    908
                              906
      80 1
      81 1
                    908
                               910
\mathbf{r}
      82 1
                    908
                              912
                                                                                                                    n
83 1
                    909
                             906
84 1
                    909
                           910
                                                                                                                    .
D
      85 1
                    909
                               912
86 1
                    910
                              906
                                                                                                                    п
      87 1
                    910
                             911
912
                                                                                                                    D
п
      88 1
                    910
                               906
      89 1
                    911
                                                                                                                    912
      90
                    911
\mathbf{r}
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed
                                                                                    PgDn PgUp Home
SHFT-FlImport Column
                                  Shift-F3AutoCHT
                                                            Shift-F5Del/Pur
                                                                                                          End
                             F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
       FlSave/Purge
eëë Ctrl:Copyëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëë ESC:Quit £
p SqNo FACTOR From
                               To
                                         Cond. Value L/R Description
                                                             L BOTTOM RAIL TO EPS HOUSING (+Y)
                                        .05856
\overline{a}
      91 1
                    921
                               901
                                                                                                                    Ħ
                    921
                               907
                                                                  BOTTOM RAIL TO EPS HOUSING
      92 1
                                         .05856
                                                                                                         (+Y)
                                                             L BOTTOM RAIL TO EPS HOUSING (+Y)
                               902
                                         11.2443
Ħ
      93 1
                    921
                                                                                                                    \pi
                               903
                                                            L BOTTOM RAIL TO EPS HOUSING (+Y)
                    921
                                         11.2443
                                        11.2443
      95 1
                              904
                                                            L BOTTOM RAIL TO EPS HOUSING (+Y)
921
                                                                                                                    921
                               905
                                                            L BOTTOM RAIL TO EPS HOUSING L BOTTOM RAIL TO EPS HOUSING
96
                                                                                                          (+Y)
                                       11.2443 L BOTTOM RAIL TO EPS HOUSING (+Y)

.08784 L MIDDLE RAIL TO EPS HOUSING (+Y)

.08784 L MIDDLE RAIL TO EPS HOUSING (+Y)

16.8760 L MIDDLE RAIL TO EPS HOUSING (+Y)

.04661 L TOP RAIL TO EPS HOUSING (+Y)

.04661 L TOP RAIL TO EPS HOUSING (+Y)

8.19666 L TOP RAIL TO EPS HOUSING (+Y)

8.95905 L TOP RAIL TO EPS HOUSING (+Y)

8.95905 L TOP RAIL TO EPS HOUSING (+Y)

8.95905 L TOP RAIL TO EPS HOUSING (+Y)
      97 1
                    921
                               906
0
                                                                                                                    98 1
                               901
                    922
     99 1
                    922
                               907
п
п
    100 1
                    922
                               902
    101 1
                    922
                              903
D
102 1
                    922
                             904
103 1
                    922
                              905
    104 1
                              901
923
                                                                                                                    D
   105 1
                    923
                               907
    106 1
923
                              902
107 1
                    923
                               903
                               904
   108 1
                    923
                                                                                                                    b
aeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                                                                 PgDn PgUp Home
                                Shift-F3AutoCHT
                                                                                                          End
       F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F1OSearch
```

```
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit £
                             Cond. Value L/R Description
                      To
m SqNo FACTOR From
                                               TOP RAIL TO EPS HOUSING (+Y)
                             8.19666
                      905
  Ĭ09 l
              923
                                               TOP RAIL TO EPS HOUSING (+Y)
                                                                                   п
                             3.43076
                      906
              923
                                            L BOTTOM RAIL TO EPS HOUSING (-Y)
L BOTTOM RAIL TO EPS HOUSING (-Y)
   110 1
                             .05856
                      901
   111 1
              924
                                                                                   0
                              .05856
   112 1
              924
                      907
                                           L BOTTOM RAIL TO EPS HOUSING (-Y)
                                                                                   n
                             11.2443
                      908
              924
                                           L BOTTOM RAIL TO EPS HOUSING (-Y)
L BOTTOM RAIL TO EPS HOUSING (-Y)
   113 1
                             11.2443
                      909
              924
   114 1
                             11.2443
              924
                      910
   115 1
                                           L BOTTOM RAIL TO EPS HOUSING (-Y)
                             11.2443
              924
                      911
                                           L BOTTOM RAIL TO EPS HOUSING (-Y)
   116 1
                             4.31
                      912
   117 1
              924
                                           L MIDDLE RAIL TO EPS HOUSING (-Y)
L MIDDLE RAIL TO EPS HOUSING (-Y)
.08784
                      901
              925
   118 1
.08784
                      907
   119 1
              925
                                           L MIDDLE RAIL TO EPS HOUSING (-Y)
16.8760
              925
                      908
   120 1
                                           L MIDDLE RAIL TO EPS HOUSING (-Y)
                             16.8760
                      909
   121 1
              925
                                           L MIDDLE RAIL TO EPS HOUSING (-Y)
L MIDDLE RAIL TO EPS HOUSING (-Y)
m
                      910
                             16.8760
              925
   122 1
                             16.8760
              925
                      911
   123 1
ㅁ
                                           L TOP RAIL TO EPS HOUSING (-Y)
                      901
                             .04661
              926
   124 1
                                           L TOP RAIL TO EPS HOUSING (-Y)
L TOP RAIL TO EPS HOUSING (-Y)
                              .04661
                      907
              926
   125 1
8.19666
926
                      908
                                                                      PgDn PgUp Home
                          ALT-F3AutoMLI
                                           UDC Allowed
CTRL-FlImport ITAS_NC
                                           Shift-F5Del/Pur
SHFT-F1Import Column
                        Shift-F3AutoCHT
                      F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     F1Save/Purge
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit £
                             Cond. Value L/R Description
                      To
m SqNo FACTOR From
                                               TOP RAIL TO EPS HOUSING (-Y)
                              8.95905
                      909
   127 1
               926
                                               TOP RAIL TO EPS HOUSING (-Y)
                              8.95905
               926
                      910
   128 1
\mathbf{p}
                                               TOP RAIL TO EPS HOUSING (-Y)
                              8.19666
                      911
               926
   129 1
                                               TOP RAIL TO EPS HOUSING (-Y)
                              3.43076
                      912
               926
\mathbf{n}
   130 1
                                               BOTTOM PCB Cu LYR TO BTM RL (-Y)
                      924
                             .85144
               1601
   131 1
                                               BOTTOM PCB Cu LYR TO BTM RL (-Y)
                              1.3282
               1602
                      924
   132 1
\Box
                                            L BOTTOM PCB Cu LYR TO BTM RL (-Y)
                              .95701
                      924
               1603
   133 1
                                           L BOTTOM PCB Cu LYR TO BTM RL (-Y)
                             1.1171
                      924
                                           L BOTTOM PCB Cu LYR TO BTM RL (-Y)
               1604
   134 1
.42572
                      924
   135 1
               1605
L BOTTOM PCB Cu LYR TO BTM RL (-Y)
                              2.12859
                      924
   136 1
               1606
.85144
                      924
                                            L
               1617
   137 1
                                            L BOTTOM PCB Cu LYR TO BTM RL (+Y)
                              .85144
               1601
                      921
   138 1
L BOTTOM PCB Cu LYR TO BTM RL (+Y)
L BOTTOM PCB Cu LYR TO BTM RL (+Y)
                              1.32824
                      921
               1614
   139 1
₽
                      921
                              2.0741
               1615
   140 1
                                            L BOTTOM PCB Cu LYR TO BTM RL (+Y)
                              2.55430
                      921
               1616
                                            L BOTTOM PCB Cu LYR TO BTM RL (+Y)
Б
   141 1
                              .85144
                      921
               1617
   142
                                            L BTM PCB POLY LYR TO MID RL (-Y)
L BTM PCB POLY LYR TO MID RL (-Y)
                              .05918
               1101
                      925
   143 1
                      925
                              .09233
               1102
PgDn PgUp Home
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed
SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                        Shift-F3AutoCHT
SHFT-FlImport Column
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit f
 p SqNo FACTOR From
                             Cond. Value L/R Description
                       To
 145 1
               1103
                       925
                              .06652
                                             L BTM PCB POLY LYR TO MID RL (-Y)
    146 1
               1104
                       925
                                                BTM PCB POLY LYR TO MID RL (-Y)
                              .07765
 Ħ
    147 1
               1105
                       925
                                             L BTM PCB POLY LYR TO MID RL (-Y)
                              .02959
                                                                                    148 1
               1106
                       925
                              .14796
                                                BTM PCB POLY LYR TO MID RL (-Y)
                                                                                    п
    149 1
               1117
                       925
                              .059184
                                                BTM PCB POLY LYR TO MID RL (-Y)
                                            L
    150 1
               1101
                       922
                              .059184
                                            L BTM PCB POLY LYR TO MID RL (+Y)
                                                                                    п
    151 1
               1114
                                            L BTM PCB POLY LYR TO MID RL (+Y)
                       922
                              .092328
                                                                                    Д
    152 1
               1115
                              .144173
 922
                                            L BTM PCB POLY LYR TO MID RL (+Y)
    153 1
 П
               1116
                       922
                              .177553
                                                BTM PCB POLY LYR TO MID RL (+Y)
   154 1
               1117
 922
                              .059184
                                            L BTM PCB POLY LYR TO MID RL (+Y)
   155 1
 ь
               601
                       925
                              1.11579
                                                TOP PCB Cu LYR TO MID RL (-Y)
                                                                                    D
    156 1
               602
 \mathbf{n}
                       925
                              1.52147
                                            L
                                                TOP PCB Cu LYR TO MID RL (-Y)
   157 1
603
                      925
                              .405689
                                            T.
                                                TOP PCB Cu LYR TO MID RL (-Y)
   158 1
               604
п
                       925
                              1.62273
                                                TOP PCB Cu LYR TO MID RL (-Y)
                                            L
   159 1
               605
В
                       925
                              .405689
                                                TOP PCB Cu LYR TO MID RL (-Y)
D
   160 1
               606
                       925
                              2.23125
                                            L
                                                TOP PCB Cu LYR TO MID RL (-Y)
  161 1
               625
                      922
                                                TOP PCB Cu LYR TO MID RL (+Y)
                                            L
                              2.23125
                              1.11579
162 1
               626
                      922
                                                TOP PCB Cu LYR TO MID RL
                                                                           (+Y)
CTRL-FlImport ITAS_NC ALT-F3AutoMLI
                                           UDC Allowed
                                                                      PgDn PgUp Home
SHFT-F1Import Column Shift-F3AutoCHT
                                           Shift-F5Del/Pur
                                                                            End
     FlSave/Purge
                      F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit £
p SqNo FACTOR From
                      To
                             Cond. Value L/R Description
                              1.11579
  163 1
                                           L TOP PCB Cu LYR TO MID RL (+Y)
L TOP PCB Cu LYR TO MID RL (+Y)
               627
                      922
   164 1
               628
                      922
                              1.11579
   165 1
1.11579
               629
                      922
                                            L TOP PCB Cu LYR TO MID RL (+Y)
                            1.11579
2.23125
.08179
.11152
.02974
.11894
.02974
.16355
.16355
.08179
.08179
.08179
                                           L TOP PCB Cu LYR TO MID RL (+Y)
L TOP PCB POLY LYR TO MID RL (-Y)
L TOP PCB POLY LYR TO MID RL (-Y)
   166 1
               630
                      922
                                                                                    167 1
               101
                      926
168 1
              102
                      926
   169 1
              103
                                           L TOP PCB POLY LYR TO MID RL (-Y)
                      926
                                           L TOP PCB POLY LYR TO MID RL (-Y)
L TOP PCB POLY LYR TO MID RL (-Y)
L TOP PCB POLY LYR TO MID RL (-Y)
L TOP PCB POLY LYR TO MID RL (-Y)
170 1
              104
                      926
                                                                                    171 1
              105
                      926
172 1
              106
                      926
                                                                                    D
173 1
              125
                                           L TOP PCB POLY LYR TO TOP RL
                      923
                                                                            (+Y)
174 1
              126
                      923
                                           L TOP PCB POLY LYR TO TOP RL (+Y)
                                                                                    175 1
                                           L TOP PCB POLY LYR TO TOP RL (+Y)
L TOP PCB POLY LYR TO TOP RL (+Y)
              127
                      923
  176 1
7
              128
                      923
                                                                                    D
177 1
              129
                      923
                                           L TOP PCB POLY LYR TO TOP RL
                                                                            (+Y)
                                                                                    178 1
130
                      923
                             .16355
                                           L TOP PCB POLY LYR TO TOP RL (+Y)
L TOP PCB THERMAL LAYER NODE-NODE
                                                                                   179 1
              601
                      602
                             .018635
   180 1
              601
                      607
                             .006764
CTRL-FlImport ITAS_NC ALT-F3AutoMLI
                                           UDC Allowed
                                                                      PgDn PgUp Home
SHFT-F1Import Column
                      Shift-F3AutoCHT
                                           Shift-F5Del/Pur
                                                                            End
     F1Save/Purge
                      F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                          Cond. Value L/R Description
m SQNo FACTOR From
                    To
                                           TOP PCB THERMAL LYR NODE-NODE
                          .025866
                    603
                                        Ť.
             602
D
  181 1
                                                                            п
                           .092383
                                        L
                    608
  182 1
             602
                                                                            ¤
                           .02423
             603
                    604
  183 1
п
                    609
                           .002573
                                        L
             603
184 1
                                                                            .02457
                                        L
                    605
             604
  185 1
                                                                            .009852
             604
                    610
  186 1
L
             605
                    606
                           .018635
n
   187 1
                                                                            п
                                        L
                           .00257
  188 1
             605
                    611
                                                                            п
                                        L
             606
                    612
                           .013565
  189 1
7
                                                                            п
                                        L
                    608
                           .02286
             607
190
      1
                                        L
                           .009630
             607
                    613
  191 1
ь
                                                                            п
                                        L
                    609
                           .019815
             608
  192 1
                                                                            L
             608
                    613
                           .002617
  193 1
77
                                                                            .009630
                    614
             608
ㅁ
   194 1
                           .04057
                                        L
   195 1
             608
                    615
Ε.
                                                                            77
                                        L
             609
                    610
                           .02972
   196 1
                           .003664
   197 1
             609
                    615
611
                           .02972
             610
198 1
                                                               PgDn PgUp Home
                                       UDC Allowed
CTRL-Flimport ITAS NC
                        ALT-F3AutoMLI
                                                                     End
                                       Shift-F5Del/Pur
                      Shift-F3AutoCHT
SHFT-FlImport Column
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     F1Save/Purge
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit £
                           Cond. Value L/R Description
                    To
 SQNO FACTOR From
TOP PCB THRML LYR NODE-NODE
                                                                            \Box
                                        L
   ī99 l
             610
                    615
                           .005234
n
                                                                            .008793
                    616
   200 1
             610
                           .022863
                                        L
             611
                    612
   201 1
                                                                            616
                           .008793
                                        L
   202 1
             611
                                                                            .002617
             611
                    617
n
   203 1
                                                                            Ħ
             612
                    617
                           .007013
                                        L
204 1
                                                                            ū
                           .01230
                    618
   205 1
             612
.007164
                                        L
             613
                    614
206 1
                                                                            Ħ
                           .024189
             613
                    619
   207
.008141
                    615
208 1
             614
                           .018940
   209 1
             614
                    620
615
                    616
                           .008141
                                        L
   210 1
D
                           .01832
   211
       1
             615
                    621
n
                           .008141
             616
                    617
   212 1
Ħ
                                                                            क्त
             616
                    622
                           .018940
D
   213 1
                           .007164
             617
                    618
D
   214 1
                           .018940
                                        L
                    623
             617
215 1
                           .010293
   216 1
              618
                    624
PgDn PgUp Home
                        ALT-F3AutoMLI UDC Allowed
CTRL-FlImport ITAS_NC
                                                                      End
                                       Shift-F5Del/Pur
SHFT-FlImport Column
                      Shift-F3AutoCHT
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
```

```
eëë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëë ESC:Quit £
                           Cond. Value L/R Description
m SqNo FACTOR From
                    To
  217 1
             619
                    620
                           .008770
                                         L
                                            TOP PCB THERMAL LYR NODE-NODE
.023410
п
   218 1
             619
                    625
                                                                             Þ
219 1
             620
                    621
                           .009967
                                                                             220 1
             620
                    625
                           .018329
                                                                             ¤
п
                    622
                           .009967
п
   221 1
             621
                                         L
                                                                             п
             621
                    627
                           .017731
                                                                             D
п
   222
                           .014145
   223 1
             622
                    623
                                                                             D
224 1
             622
                    628
                           .012913
                                                                             D
225 1
             623
                    624
                           .008770
                                                                             D
226 1
             623
                    629
                           .018324
                                         L
                                                                             D
             624
   227 1
                    630
                           .009961
                                                                             p
.010684
Б
   228 1
             625
                    626
                                                                             n
229 1
             626
                    627
                           .012141
п
   230 1
             627
                    628
                           .012141
                                        L
                                                                            В
   231 1
             628
                    629
                           .012141
629
                    630
п
   232 1
                           .010684
n
   233 1
             501
                    502
                          .005651
                                           TOP PCB LOWEST POLY LYR NODE-NODE m
   234 1
             501
                    507
                           .002025
77
                                         Τ.
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                                PgDn PgUp Home
                     Shift-F3AutoCHT
SHFT-FlImport Column
                                                                      End
     FlSave/Purge
                  F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
éëë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry éëëëëëëëëëëëë ESC:Quit £
□ SqNo FACTOR From
                    To
                           Cond. Value L/R Description
                           .005650
                                           TOP PCB BTM POLY LYR NODE-NODE
  235 1
          502
                    503
                                        T.
n
D
   236 1
             502
                    508
                           .002025
                                                                             237 1
             503
                           .007733
                    504
\Box
                                        L
                                                                            238 1
             503
                    509
                           .002761
                                                                             Þ
   239 1
             504
                    505
                           .007346
Ħ
                           .007364
   240 1
             504
                    510
п
                           .007346
\mathbf{n}
   243 1
             505
                    506
                                        L
                                                                            п
                           .002946
п
   242 1
             505
                    511
                           .005650
243 1
             506
                    512
                                        Ť.
                                                                            П
   244 1
             507
                    508
                           .007364
                                                                            .004050
   245 1
             507
                    513
                                                                            508
                    509
246 1
                           .006839
                                                                            247 1
             508
                    513
.004488
                                                                            248 1
                           .009359
508
                    514
                                        T.
                                                                            D
                           .001224
249 1
             508
                    515
                           .004488
250 1
             509
                    510
                                        L
                                                                            b
                           .0004087
251 1
             509
                    515
                                        L
   252 1
             510
                    511
                           .008891
                                        T.
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                              PgDn PgUp Home
                      Shift-F3AutoCHT
                                                                      End
    FlSave/Purge
                 F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit £
                                       L/R Description
                           Cond. Value
m SqNo FACTOR From
                    To
                                           TOP PCB BTM POLY LYR NODE-NODE
                    515
                           .002449
                                        L
  253 1
             510
                                                                            П
                    516
                           .004080
  254 1
             510
Ħ
                                                                            D
                    512
                           .006839
             511
  255 1
D
                                                                            D
                           .004080
                    516
  256 1
             511
                                                                            517
                           .001224
  257 1
             511
512
                    517
                           .003264
  258
.005712
                    518
             512
  259 1
                                                                            n
                                        L
                    514
                           .002018
             513
п
  260 1
                                                                            p
                           .007217
                    519
      1
             513
п
   261
                                                                            L
                           .002285
             514
                    515
n
   262 1
                           .005670
                    520
             514
   263 1
                                                                            7
             515
                    516
                           .002284
                                        Ľ
п
  264 1
                                                                            .005670
D
   265
      1
             515
                    521
                                                                            п
                           .002285
                                        L
             516
                    517
266 1
                    522
                           .005670
             516
  267 1
                                                                            27
                                        T.
                    518
                           .002010
             517
п
  268 1
                                                                             .005670
                    523
   269 1
             517
270 1
             518
                    524
                           .007217
PgDn PgUp Home
                                       UDC Allowed
CTRL-Flimport ITAS_NC
                        ALT-F3AutoMLI
                                                                      End
                                       Shift-F5Del/Pur
SHFT-Flimport Column
                      Shift-F3AutoCHT
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit f
                                       L/R Description
m SqNo FACTOR From
                           Cond. Value
                    To
                                           TOP PCB BTM POLY LYR NODE-NODE
                           .002629
                                        L
                    520
   271 1
             519
П
                    525
                           .006984
             519
   272 1
\Box
                           .002988
   273 1
             520
                    521
                                                                             D
                                         L
                    526
                           .005487
   274 1
             520
¤
                           .002988
                    522
   275
      1
             521
Ħ
                           .005487
                                         L
             521
                    527
   276 1
                                                                             L
                    523
                           .002988
             522
п
   277 1
                                                                             D
                           .005487
   278
             522
                    528
                                                                             n
                    524
                           .002629
             523
   279 1
.005487
   280 1
             523
                    529
                                                                             77
             525
                    526
                           .002164
                                         L
   281 1
Ħ
                           .002460
                    527
   282 1
             526
Τ.
                    528
                           .002460
             527
   283 1
L
                           .002460
                    529
   284 1
             528
             529
                    530
                           .002164
                                         L
   285
      1
TOP PCB GRND LYR NODE-NODE
                    402
                           .018902
             401
286
   287 1
             401
                    407
                           .006764
                           .025866
             402
                    403
288 1
PgDn PgUp Home
                                        UDC Allowed
CTRL-Flimport ITAS_NC
                        ALT-F3AutoMLI
                                                                      End
                      Shift-F3AutoCHT
                                        Shift-F5Del/Pur
SHFT-FlImport Column
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
```

```
éëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëë ESC:Quit f
                         Cond. Value L/R Description
                    To
□ SqNo FACTOR From
                                          TOP PCB GRND LYR NODE-NODE
  289 1
             402
                    408
                        .09238
                                       L
   290 1
             403
                    404
                          .02422
                                        T.
7
   291 1
             403
                    409
                          .00257
                                        L
                                                                           П
405
   292 1
             404
                          .02457
                          .009852
293 1
             404
                    410
                                                                           405
                    406
                                                                           294 1
                          .01863
                          .002573
   295 1
             405
                                       T.
                                                                           р
n
                    411
             406
                                                                           296 1
                    412
                          .013565
                         .02286
                                                                           297 1
             407
                   408
                                       T.
n
p
   298 1
             407
                    413
                          .009630
                                       L
                                                                           Þ
                          .01981
D
   299 1
             408
                    409
                                       L
                                                                           р
                          .002617
   300 1
             408
                    413
                                                                           408
                          .009630
                                                                           414
                                       T.
   301 1
77
                          .04056
302 1
             408
                    415
                                       L
                                                                           D
             409
                    410
                          .02972
   303 1
                                       L
D
p
   304 1
             409
                    415
                          .003664
                                       L
                                                                           n
                          .029722
   305 1
             410
                    411
                                       L
306 1
             410
                    415
                           .005234
                                       T.
ALT-F3AutoMLI UDC Allowed
hift-F3AutoCHT Shift-F5Del/Pur
CTRL-Flimport ITAS NC
                                                              PgDn PgUp Home
SHFT-F1Import Column Shift-F3AutoCHT
                                                                    End
                  F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
eëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëë ESC:Quit f
m SqNo FACTOR From
                    To
                          Cond. Value L/R Description
                                          TOP PCB GRND LYR NODE-NODE
  307 1
                    416
                          .008793
410
                                       L
D
   308 1
             411
                    412
                          .022863
                                                                           309 1
411
                   416
                          .008793
                                       L
                                                                           п
  310 1
             411
                    417
                          .002617
                                                                           .007013
                    417
                                                                           n
  311 1
             412
                                       L
312 1
             412
                    418
                          .01230
                                       L
                                                                           D
                          .007164
  313 1
             413
                   414
                                       Τ.
                                                                           n
.024189
  314 1
             413
                   419
                                                                           D
                          .008141
  315 1
                                                                           414
                   415
                                       L
316 1
             414
                   420
                          .018940
                                       L
                                                                           .008141
  317 1
415
                   416
                                       L
                                                                           .018322
  318 1
             415
                  421
                                                                           319 1
            416
                   417
                          .008141
                                       Τ.
                                                                           □
320 1
             416
                    422
                          .018940
                                       L
                                                                           D
  321 1
             417
                   418
                          .007164
D
                                       L
322 1
             417
                   423
                          .018940
D
  323 1
             418
                   424
                          .010293
324 1
             419
                    420
                          .008770
aeeeeeeeeeeeeeeeeeeeeeeeee
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                      PgDn PgUp Home
                                                                    End
    F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                          Cond. Value L/R Description
m SqNo FACTOR From
                   To
                                        L TOP PCB GRND LYR NODE-NODE
  325 1
             419
                    425
                          .02341
п
                                                                            Þ
                          .009966
                    421
             420
¤
  326 1
                           .018329
                                                                            420
                    426
  327 1
                    422
                           .009966
             421
  328 1
                          .017731
                                                                            427
   329 1
             421
                                                                            p
  330 1
             422
                    423
                           .014145
                    428
                          .012913
             422
  331 1
                                                                            n
                          .008770
             423
                    424
ū
  332 1
                                                                            Þ
             423
                    429
                          .018329
333 1
                                                                            .009961
                    430
             424
  334 1
                          .01068
             425
                    426
  335 1
п
                    427
                          .01214
   336
             426
                                                                            428
                          .01214
  337 1
             427
п
                           .01214
                                                                            429
  338 1
             428
                    430
                          .01068
  339 1
             429
n
                                           TOP PCB MID POLY LYR NODE-NODE
                                                                            77
                           .005650
                    302
   340
             301
                    307
                           .002025
             301
  341 1
п
                    303
                           .007733
  342 1
             302
PgDn PgUp Home
                                       UDC Allowed
CTRL-FlImport ITAS_NC
                       ALT-F3AutoMLI
                                                                     End
                                       Shift-F5Del/Pur
                     Shift-F3AutoCHT
SHFT-Flimport Column
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
eeë Ctrl:Copyeeëëeëëëëëëëë ITAS Conductor Data Entry eeëëëëëëëëëëëë ESC:Quit f
                                       L/R Description
                          Cond. Value
                    To
m SqNo FACTOR From
                                           TOP PCB MID POLY LYR NODE-NODE
                          .002761
                                        L
                    308
  343 1
             302
D
                                                                            304
                           .007346
  344 1
             303
                    309
                          .007364
             303
\Box
  345 1
                                                                            10
                          .007346
                    305
  346 1
             304
XI.
  347 1
             304
                    310
                          .002946
                                                                            п
                    306
                           .005650
             305
  348 1
                                                                            305
                    311
                           .007364
                                        L
\Box
  349
                                                                            b
                    312
                          .004050
₽
  350 1
             306
                                                                            p
                                        Τ.
             307
                    308
                          .006840
  351 1
                    313
                          .004488
             307
352 1
                                                                            Þ
                                        L
   353
             308
                    309
                           .009359
                                                                            p
                    313
                          .001224
             308
354 1
                                                                            D
                                        L
  355 1
             308
                    314
                           .004488
                    315
                           .000408
  356 1
             308
                                                                            .008991
  357 1
             309
                    310
                    315
                           .016321
                                        Ť.
  358 1
             309
                           .00889
                                                                            310
                    311
359 1
                    315
                           .002449
  360
             310
PgDn PgUp Home
                                       UDC Allowed
CTRL-Flimport ITAS NC
                       ALT-F3AutoMLI
                                       Shift-F5Del/Pur
                                                                     End
SHFT-FlImport Column
                     Shift-F3AutoCHT
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
eeë Ctrl:Copyeeëeeeeeeee ITAS Conductor Data Entry eeeeeeeeeeee ESC:Quit f
□ SqNo FACTOR From
                   To
                          Cond. Value L/R Description
                                         TOP PCB MID POLY LAYER NODE-NODE
  361 1
             310
                          .004080
                                       L
                   316
п
   362 1
             311
                          .006840
                                       L
                                                                         312
   363 1
             311
                   316
                          .004080
                                       L
                                                                         364 1
             311
                   317
                          .001224
                                                                         ь
365 1
             312
                   317
                          .003264
                                                                         п
ь
   366
             312
                   318
                          .005712
                                                                         367 1
             313
                   314
                          .002018
                                                                         Þ
   368 1
             313
                   319
                          .007217
                                                                         Þ
   369 1
             314
                   315
                                       T.
п
                          .002285
                                                                         370
      1
             314
                   320
                          .005670
                                                                         371 1
             315
                          .002285
316
                                       T.
                                                                         n
                         .005670
372 1
             315
                   321
   373 1
ь
             316
                   317
                          .002285
                                      T.
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                          .005670
374 1
             316
                   322
                                                                         375 1
             317
                   318
.002010
                                      Τ.
                                                                         п
376 1
             317
                   323
                          .005670
п
  377 1
             318
                   324
                          .0007217
                                      L
                                                                         378 1
             319
                   320
                          .002629
CTRL-Flimport ITAS_NC
                      ALT-F3AutoMLI
                                      UDC Allowed
                                                             PgDn PgUp Home
SHFT-FlImport Column
                    Shift-F3AutoCHT
                                      Shift-F5Del/Pur
                                                                   End
                  F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F1OSearch
    FlSave/Purge
éeë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëë ESC:Quit £
p SqNo FACTOR From
                   To
                         Cond. Value
                                     L/R Description
                                                                         379 1
            319
                   325
                                         TOP PCB MID POLY LYR NODE-NODE
e e
                         .006984
                                      L
   380 1
             320
                   321
                          .002988
                                                                         381 1
            320
n
                   326
                          .005487
                                       L
                                                                         382 1
             321
                   322
                         .002988
                                                                         п
  383 1
                         .005487
                   327
321
                                                                         384 1
             322
                   323
.002988
                                       L
                                                                         E
  385 1
            322
                   328
                          .005487
                                      L
                                                                         п
  386 1
            323
                   324
                         .002629
                                                                         п
p
  387 1
                          .005487
            323
                   329
                                      Τ.
                                                                         388 1
            324
                   330
                         .06984
                                                                         D
  389 1
            325
                         .002164
                   326
                                      L
                                                                         .002460
b
  390 1
            326
                   327
391 1
            327
                   328
                          .002460
                                      T.
                                                                         П
  392 1
\mathbf{r}
            328
                   329
                          .002460
                                      L
  393 1
            329
                   330
                         .002164
                                      L
  394 1
201
                   202
                         .018902
                                         TOP PCB TOP Cu LYR NODE-NODE
395 1
            201
                   207
                         .006764
  396 1
            202
                   203
                          .025866
CTRL-FlImport ITAS_NC ALT-F3AutoMLI UDC Allowed
                                                             PgDn PgUp Home
SHFT-FlImport Column
                     Shift-F3AutoCHT
                                     Shift-F5Del/Pur
                                                                   End
                 F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

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èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                         Cond. Value L/R Description
 Sano FACTOR From
                   To
                                         TOP PCB TOP Cu LYR NODE-NODE
                         .09238
                   208
                                      L
  397 1
            202
                         .02423
            203
                   2045
  398 1
                         .002573
  399 1
            203
                   209
                                                                        .02457
            204
                   205
  400 1
                   210
                         .00985
            204
401 1
                                                                        .01863
  402 1
            205
                   206
п
                                      L
  403 1
            205
                   211
                         .002573
                   212
                         .013565
            206
  404 1
                                                                        to
            207
                   208
                         .022863
  405 1
207
                   213
                         .009630
406 1
                                                                        D
            208
                   209
                         .01981
                                      T.
  407 1
.002670
                   213
            208
408 1
                                                                        409 1
            208
                   214
                         .009630
Е
                                                                        n
                   215
                         .04056
            208
410 1
                                                                        т.
  411 1
            209
                   210
                         .02972
            209
                   215
                         .003663
Ħ
  412 1
  413 1
            210
                   211
                         .02972
            210
                   215
                          .005234
  414 1
ALT-F3AutoMLI UDC Allowed
                                                            PgDn PgUp Home
CTRL-F1Import ITAS_NC
                                                                  End
SHFT-F1Import Column
                    Shift-F3AutoCHT
                                    Shift-F5Del/Pur
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                         Cond. Value L/R Description
                   To
m SqNo FACTOR From
                                      L TOP PCB TOP Cu LYR NODE-NODE
  415 1
            210
                   216
                         .008793
b
                         .02286
                   212
416 1
            211
                                                                        211
                   216
                         .008793
                                      L
  417 1
                   217
                         .0026170
п
  418 1
            211
                                                                        .0070134
            212
                   217
419 1
            212
                   218
                         .001230
  420 1
E
                                                                        n
                         .0071641
  421 1
            213
                   214
                   219
                         .024190
  422 1
            213
.008141
                                                                        423 1
            214
                   215
                                                                        .018940
                   220
  424 1
            214
                                                                        n
                         .0081410
                   216
  425 1
            215
  426 1
            215
                   221
                         .018322
Б
  427 1
                   217
                         .0189397
            216
D
                         .018940
            216
                   222
  428 1
  429 1
            217
                   218
                         .007164
D
                         .0018940
                   223
  430 1
            217
                         .010293
                   224
  431 1
            218
                   220
                          .008770
            219
  432 1
PgDn PgUp Home
CTRL-FlImport ITAS_NC ALT-F3AutoMLI UDC Allowed
                   Shift-F3AutoCHT
                                     Shift-F5Del/Pur
                                                                  End
SHFT-FlImport Column
                   F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                          Cond. Value L/R Description
m SqNo FACTOR From
                    To
                          .02341
                                           TOP PCB TOP Cu LYR NODE-NODE
  433 1
             219
                    225
                                       L
                                                                            п
                           .009966
   434 1
             220
                    221
                                        E.
                                                                            435 1
             220
                    226
                           .018329
                                        L
                                                                            n
             221
                           .009966
                                                                            Œ.
   436 1
                    222
                           .017731
                                                                           п
   437 ]
             221
                    227
                                        L
   438 1
             222
                    223
                           .014145
                                                                            222
                    228
                           .01291
                                                                           439 1
                                        T.
b
   440 1
             223
                    224
                          .008770
                                                                           D
             223
                    229
                           .018329
                                                                           ū
                                        \mathbf{L}
   441 1
.009961
442
             224
                    230
                                        L
                                                                           п
             225
   443 1
                    226
                           .010684
                                        L
Þ
   444 1
             226
                    227
                          .012141
                                                                           n
   445 1
             227
                    228
                          .012141
p
   446 1
             228
                    229
                          .012141
                                        T.
                                                                           n
   447 1
             229
                    230
                          .010684
                                           TOP PCB TOP POLY LYR NODE-NODE
             101
                    102
                           .005650
n
   448 1
                                        T.
п
   449 1
             101
                    107
                          .002025
   450 1
             102
                    103
                           .007733
                                        T.
n
CTRL-F1Import ITAS_NC
                       ALT-F3AutoMLI
                                     UDC Allowed
                                                               PgDn PgUp Home
                                      Shift-F5Del/Pur
SHFT-FlImport Column
                     Shift-F3AutoCHT
                                                                     End
    FlSave/Purge
                  F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
éëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëë ESC:Quit £
p SqNo FACTOR From
                          Cond. Value L/R Description
                    To
                                          TOP PCB TOP POLY LYR NODE-NODE
                          .002761
  451 1
                    108
                                       L
102
                                                                           n
             103
                    104
                          .0073456
452 1
                                                                           .0073638
   453 1
             103
                    109
Τ.
                                                                           73
  454 1
             104
                    105
                          .007346
                                                                            455 1
             104
                    110
                           .0029455
                                                                           п
                                        L
   456 1
             105
                    106
                          .005650
                                        L
                                                                           c
  457 1
             105
                    111
                          .0073638
                                        T.
                                                                           458 1
             106
                    112
                          .004050
                                                                            .006839
459 1
             107
                    108
                                        Ī.
                                                                           D
   460 1
             107
                    113
                          .004488
                                        L
                                                                           .009359
  461 1
             108
                    109
L
                                                                           D
D
  462 1
             108
                    113
                          .001224
                                                                           463 1
             108
                    114
                          .004488
                                                                           0
                          .0004087
464 1
             108
                    115
                                        L
                                                                           D
             109
  465 1
                   110
                          .0088991
                                        L
D
  466 1
             109
                   115
                          .01632
                                        T.
                                                                           D
  467 1
             110
p
                    111
                          .008891
                                        L
  468 1
110
                    115
                          .002449
                                        T.
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                               PgDn PgUp Home
SHFT-FlImport Column
                     Shift-F3AutoCHT
                                                                     End
                 F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F1OSearch
    F1Save/Purge
```

```
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit £
                           Cond. Value L/R Description
m SqNo FACTOR From
                    To
                                        L TOP PCB TOP POLY LYR NODE-NODE
                    116
                           .004080
             110
77
  469 1
                                                                             D
                           .006839
   470 1
             111
                    112
п
                                                                             .004080
             111
                    116
  471 1
             111
                    117
                           .001224
472 1
                           .032642
                                                                             п
                    117
   473 1
             112
                                                                             c
  474 1
             112
                    118
                           .005712
                                         L
             113
                    114
                           .002018
                                         L
  475 1
77
                                                                             .007217
   476
      1
             113
                    119
                                                                             ¤
                           .002285
             114
                    115
  477 }
п
                                                                             D
                           .005670
                                         L
                    120
  478 1
             114
                           .002285
                                         L
             115
                    116
  479 1
71
                                                                             73
                                        L
                           .005670
   480
      1
             115
                    621
             116
                    117
                           .002845
  481 1
.005670
                                        T.
                                                                             п
   482 1
             116
                    122
                           .002010
  483 1
             117
                    118
77
                                                                             Б
                           .005670
                    123
                                        L
   484
      1
             117
                           .007217
                                        T.
             118
                    124
  485 1
п
                           .002629
                    120
   486 1
             119
PgDn PgUp Home
CTRL-Flimport ITAS_NC
                                       UDC Allowed
                       ALT-F3AutoMLI
                                                                      End
                                       Shift-F5Del/Pur
                      Shift-F3AutoCHT
SHFT-FlImport Column
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
eeë Ctrl:Copyeeëeeeëeee ITAS Conductor Data Entry eeëeeeeeee ESC:Quit f
                           Cond. Value L/R Description
m SqNo FACTOR From
                    To
                                           TOP PCB TOP POLY LYR NODE-NODE
  487 1
                    125
                           .006984
                                        L
             119
.002988
  488 1
             120
                    121
                           .005487
                                         L
  489 1
             120
                    126
\mathbf{n}
                                                                             .002988
                                         L
п
  490 1
             121
                    122
                                                                             п
                           .005487
  491 1
             121
                    127
                                                                             .002988
             122
                    123
492 1
             122
                    128
                           .005487
                                         L
  493 1
                                                                             .002629
494 1
             123
                    124
                                                                             .005487
  495 1
             123
                    129
                    130
                           .006984
  496 1
             124
п
                                        L
  497
             125
                    126
                           .002164
                                                                             127
                           .002460
  498 1
             126
Τ.
                                                                             \Box
  499 1
             127
                    128
                           .002460
                                         L
  500 1
             128
                    129
                           .002460
D
                                        L
  501 1
             129
                    130
                           .000164
                    501
                           .625
                                           TOP PCB LAYER 6XX TO 5XX
  502 1
             601
L TOP PCB LAYER 6XX TO 5XX
L TOP PCB LAYER 6XX TO 5XX
                           .85227
                    502
п
  503 1
             602
                    503
                           .22727
  504 1
             603
PgDn PgUp Home
                        ALT-F3AutoMLI
                                       UDC Allowed
CTRL-FlImport ITAS NC
SHFT-FlImport Column
                                       Shift-F5Del/Pur
                                                                      End
                      Shift-F3AutoCHT
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
eëë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëë ESC:Quit £
 □ SqNo FACTOR From
                                            Cond. Value L/R Description
                                  To
                                          .90909
     505 1
                      604
                                504
                                                                   L TOP PCB LAYER 6XX TO 5XX
      506 1
                       605
                                   505
                                              .90909
                                                                          TOP PCB LAYER 6XX TO 5XX
     507 1
                       606
                                         TOP PCB LAYER 6XX TO 5XX
                                   506
                                              1.2450
                       607
     508 1
                                   507
                              508
     509 1
                       608
     510 1
                       609
                                   509
                       610 510
     511 1
     512 1
                       611 511
                      612
613
                                512
513
ь
     513 1
     514 1
п
                      614 514
515 1
n
     516 1
                      615 515
                      616 516
617 517
     517 1
     518 1
n
                                                                                                                                 519 1
                       618
                                518
                                519
п
     520 1
                       619
     521 1
                       620
                                  520
     522 1
                       621
                                  521
CTRL-FlImport ITAS_NC ALT-F3AutoMLI UDC Allowed
                                                                                                            PgDn PgUp Home
SHFT-FlImport Column
                                     Shift-F3AutoCHT
                                                                   Shift-F5Del/Pur
                                                                                                                     End
        FlSave/Purge
                               F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
èëë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëë ESC:Quit £
p SqNo FACTOR From
                                  To
                                           Cond. Value L/R Description
    523 1
                 622
                                 522
                                          .27962
                                                                   L TOP PCB LAYER 6XX TO 5XX
                                         .27962 L TOP PCB LAYER 6XX TO 5XX
.35579 L TOP PCB LAYER 6XX TO 5XX
.29301 L TOP PCB LAYER 6XX TO 5XX
.23024 L TOP PCB LAYER 6XX TO 5XX
.29301 L TOP PCB LAYER 6XX TO 5XX
.62509 L TOP PCB LAYER 5XX TO 4XX
.85227 L TOP PCB LAYER 5XX TO 4XX
.22727 L TOP PCB LAYER 5XX TO 4XX
.90909 L TOP PCB LAYER 5XX TO 4XX
.75655 L TOP PCB LAYER 5XX TO 4XX
p 524 1
                                                                   L TOP PCB LAYER 6XX TO 5XX
L TOP PCB LAYER 6XX TO 5XX
                       623
                                  523
                                             .27962
   525 1
                     624
                                524
                                                                                                                                 526 1
                     625
                              525
                                526
    527 1
                     626
Ħ
    528 1
                     627
                                 527
                                                                                                                                 528
    529 1
                    628
n
    530 1
                    629
                              529
                               530
    531 1
                     630
532 1
                      501
                                 401
                                                                                                                                 n
    533 1
                     502
                                 402
                     503
п
    534 1
                                403
                                                                                                                                 535 1
                                 404
p
                      504
    536 1
                    505
                                405
   537 1
                     506
                                406
    538 1 .
                      507
                                407
                              408
539 1
                      508
    540 1
                      509
                                 409
PgDn PgUp Home
                                                                  Shift-F5Del/Pur
                                                                                                                     End
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëë ESC:Quit f
                          Cond. Value L/R Description
                    To
m SqNo FACTOR From
                                           TOP PCB LAYER 5XX TO 4XX
                           1.10047
             510
                    410
                                        L
  541 1
TOP PCB LAYER 5XX TO 4XX
                    411
                           1.10047
             511
  542 1
                                           TOP PCB LAYER 5XX TO 4XX
                    412
                           1.51311
             512
  543 1
п
                                        L TOP PCB LAYER 5XX TO 4XX
                          .27196
             513
                    413
  544 1
                                        L TOP PCB LAYER 5XX TO 4XX
                    414
                          .21378
             514
  545 1
                                        L TOP PCB LAYER 5XX TO 4XX
                                                                            п
                          .21378
                    415
             515
  546 1
                                        L TOP PCB LAYER 5XX TO 4XX
                          .21378
             516
                    416
  547 1
п
                                       L TOP PCB LAYER 5XX TO 4XX
                          .21378
                    417
             517
  548 1
                                       L TOP PCB LAYER 5XX TO 4XX
                          .27196
             518
                    418
  549 1
n
                                       L TOP PCB LAYER 5XX TO 4XX
                         .35579
.27962
.27962
.27962
                                                                            п
                    419
             519
550 1
                                       L TOP PCB LAYER 5XX TO 4XX
L TOP PCB LAYER 5XX TO 4XX
             520
                    420
  551 1
421
             521
  552 1
                                       L TOP PCB LAYER 5XX TO 4XX
             522
                    422
  553 1
n
                          .27962
.27962
.35579
.29301
                                       L TOP PCB LAYER 5XX TO 4XX
                                                                            423
             523
  554 1
                                           TOP PCB LAYER 5XX TO 4XX
                                       L
             524
                    424
  555 1
Ħ
                                        L TOP PCB LAYER 5XX TO 4XX
                    425
                           .29301
             525
  556 1
                                        L TOP PCB LAYER 5XX TO 4XX
                          .23024
  557 1
             526
                    426
TOP PCB LAYER 5XX TO 4XX
             527
                    427
                           .23024
                                        T.
558 1
                                                                PgDn PgUp Home
                       ALT-F3AutoMLI UDC Allowed
CTRL-Flimport ITAS NC
                                       Shift-F5Del/Pur
                                                                      End
SHFT-Flimport Column
                      Shift-F3AutoCHT
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit £
                           Cond. Value L/R Description
m SqNo FACTOR From
                    To
                                           TOP PCB LAYER 5XX TO 4XX
                           .23024
                                        L
             528
                    428
559 1
                                           TOP PCB LAYER 5XX TO 4XX
                                                                             .23024
                    429
             529
   560 1
                                           TOP PCB LAYER 5XX TO 4XX
                    430
                           .29301
             530
  561 1
                                           TOP PCB LAYER 4XX TO 3XX
                    301
                           .625
  562 1
             401
                                        L TOP PCB LAYER 4XX TO 3XX
                           .85227
             402
                    302
   563 1
                                       L TOP PCB LAYER 4XX TO 3XX
L TOP PCB LAYER 4XX TO 3XX
                           .22727
             403
                    303
   564 1
                          .90909
                    304
             404
   565 1
                                       L TOP PCB LAYER 4XX TO 3XX
                                                                             305
                           .90909
             405
   566 1
п
                                                                3XX
                                                                             □
                                       L TOP PCB LAYER 4XX TO
                          1.25
                    306
   567 1
             406
                                       L TOP PCB LAYER 4XX TO
L TOP PCB LAYER 4XX TO
                                                                3XX
                           .75655
                    307
   568 1
             407
                           1.03177
                                                                3XX
             408
                    308
   569 1
                                       L TOP PCB LAYER 4XX TO 3XX
                           .27512
   570 1
             409
                    309
L TOP PCB LAYER 4XX TO
                                                                3XX
                           1.10048
             410
                    310
   571 1
                           1.10048
                                        L TOP PCB LAYER 4XX TO 3XX
L TOP PCB LAYER 4XX TO 3XX
                                           TOP PCB LAYER 4XX TO 3XX
             411
                    311
   572 1
                           1.51311
             412
                    312
   573 1
n
                                        L TOP PCB LAYER 4XX TO 3XX
                           .27196
             413
                    313
   574 1
                           .21378
                                        L TOP PCB LAYER 4XX TO 3XX
                    314
   575 1
             414
L TOP PCB LAYER 4XX TO 3XX
                            .21378
   576 1
             415
                    315
PgDn PgUp Home
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed
                                                                      End
                                        Shift-F5Del/Pur
SHFT-F1Import Column
                     Shift-F3AutoCHT
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                              Cond. Value L/R Description
m SgNo FACTOR From
                      To
                                             L TOP PCB LAYER 4XX TO 3XX
                              .21378
   577 1
              416
                       316
TOP PCB LAYER 4XX TO 3XX
                              .21378
               417
                       317
   578 1
                                             L TOP PCB LAYER 4XX TO 3XX
                              .27196
   579 1
               418
                       318
п
                                             L
                                                 TOP PCB LAYER 4XX TO 3XX
   580 1
               419
                       319
                              .27196
п
                              .35579
                                            L TOP PCB LAYER 4XX TO 3XX
   581 1
               420
                       320
L TOP PCB LAYER 4XX TO 3XX
L TOP PCB LAYER 4XX TO 3XX
                              .27196
   582 1
              421
                      321
422
                              .27196
                                                                                      п
   583 1
                       322
.27196
                                            L TOP PCB LAYER 4XX TO 3XX
                      323
   584 1
              423
р
                                            L TOP PCB LAYER 4XX TO 3XX
              424
                      324
                              .90909
585 1
                                            L TOP PCB LAYER 4XX TO 3XX
              425
                     325
                             .35579
                                                                                      586 1
                           .29301
                                            L TOP PCB LAYER 4XX TO 3XX
              426 326
                                                                                      D
   587 1
Ü
                              .23024
                                            L TOP PCB LAYER 4XX TO 3XX
              427
                     327
   588 1
7
                                            L TOP PCB LAYER 4XX TO 3XX
   589 1
              428
                     328
                            .23024
                             .23024
                                           L TOP PCB LAYER 4XX TO 3XX
L TOP PCB LAYER 4XX TO 3XX
   590 1
              429
                      329
TI.
   591 1
              430
                       330
                                            L TOP PCB LAYER 3XX TO 2XX
   592 1
              301
                       201
                              .625
.85227 L TOP PCB LAYER 3XX TO 2XX .22727 L TOP PCB LAYER 3XX TO 2XX
              302
593 1
                       202
                       203
   594 1
               303
PgDn PgUp Home
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed
SHFT-FlImport Column
                        Shift-F3AutoCHT
                                            Shift-F5Del/Pur
                                                                              End
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
éëë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëë ESC:Quit £
                              Cond. Value L/R Description
m SqNo FACTOR From
                      To
                                            L TOP PCB LAYER 3XX TO 2XX
 595 1
            304
                      204
                             .90909
                                             L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
               305
                      205
   596 1
                              .90909
597 1
               306
                       206
                              1.25
                              .75655
   598 1
               307
                      207
                                            L TOP PCB LAYER 3XX TO 2XX
                                         L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
                             1.03177
D
   599 1
               308
                      208
   600 1
               309
                      209
                              .27512
1.10048
   601 1
310
                      210
                                           L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
   602 1
               311
                      211
                              1.10048
                             1.51311
                     212
603 1
               312
                                                                                      .27196
604 1
               313
                      213
                                                                                      L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
   605 1
314
                      214
                                                                                     .21378
                     215
   606 1
              315
                             .21378
.21378
.27196
   607 1
               316
                      216
\overline{\mathbf{O}}
   608 1
               317
                      217
   609 1
               318
                      218
.35559 L TOP PCB LAYER 3XX TO 2XX .27196 L TOP PCB LAYER 3XX TO 2XX .27196 L TOP PCB LAYER 3XX TO 2XX
                                           L TOP PCB LAYER 3XX TO 2XX
   610 1
               319
                      219
   611 1
               320
                      220
612 1
               321
                       221
PgDn PgUp Home
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/
SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur End F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F1OSearch
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                                                     Cond. Value L/R Description
m SqNo FACTOR From
                                       To
                                                                               L TOP PCB LAYER 3XX TO 2XX
                                                    .27196
    613 1
                          322
                                       222
\alpha
                                                    .27196
                                                                                L TOP PCB LAYER 3XX TO 2XX
                                       223
     614 1
                          323
n
                                                                            L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 3XX TO 2XX
                                                    .35579
                                        224
     615 1
                          324
                                        225
                                                     .29301
                          325
     616 1
                                                   .23024 L TOP PCB LAYER 3XX TO 2XX
.23024 L TOP PCB LAYER 3XX TO 2XX
.23024 L TOP PCB LAYER 3XX TO 2XX
.23024 L TOP PCB LAYER 3XX TO 2XX
.23024 L TOP PCB LAYER 3XX TO 2XX
.29301 L TOP PCB LAYER 3XX TO 2XX
.625 L TOP PCB LAYER 2XX TO1XX
.85227 L TOP PCB LAYER 2XX TO1XX
.22727 L TOP PCB LAYER 2XX TO1XX
.90909 L TOP PCB LAYER 2XX TO1XX
.90909 L TOP PCB LAYER 2XX TO1XX
.90909 L TOP PCB LAYER 2XX TO1XX
.75655 L TOP PCB LAYER 2XX TO1XX
.75655 L TOP PCB LAYER 2XX TO1XX
.75655 L TOP PCB LAYER 2XX TO1XX
                                                     .23024
     617 1
                          326
                                       226
     618 1
                          327
                                       227
                                       228
                          328
     619 1
₽
                          329
                                       229
D
     620 1
                                                                            L TOP PCB LAYER 3XX TO 2XX
L TOP PCB LAYER 2XX TO1XX
L TOP PCB LAYER 2XX TO1XX
                                       230
                          330
п
     621 1
                                                                                                                                                       D
                                                  .625
                        201
                                       101
     622 1
                          202
                                       102
     623 1
624 1
                          203
                                       103
204
                                       104
625 1
                                       105
                          205
     626 1
                          206
                                       106
п
    627 1
                                       107
                          207
                                                     1.03177
     628 1
                                                                             L TOP PCB LAYER 2XX TO1XX
L TOP PCB LAYER 2XX TO1XX
                                       108
                          208
     629 1
\overline{\mathbf{D}}
                                       109
     630 1
                          209
PgDn PgUp Home
CTRL-F1Import ITAS NC
                                              ALT-F3AutoMLI UDC Allowed
                                                                                                                                         End
                                          Shift-F3AutoCHT
                                                                              Shift-F5Del/Pur
SHFT-FlImport Column
                                         F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
         FlSave/Purge
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                                                     Cond. Value L/R Description
m SqNo FACTOR From
                                       To
                                                                             L TOP PCB LAYER 2XX TO1XX
                                                     1.10048
                                       110
    631 1
                          210
                                                                               L TOP PCB LAYER 2XX TO1XX
                                       111
                                                     1.10048
    632 1
                          211
                                                 1.51311

.27196
    L TOP PCB LAYER ZAA TOTXX
.21378
    L TOP PCB LAYER ZXX TOTXX
.27196
    L TOP PCB LAYER ZXX TOTXX
.23024
    L TOP PCB LAYER ZXX TOTXX
                                                                               L TOP PCB LAYER 2XX TO1XX
                                                     1.51311
    633 1
                          212
                                       112
                          213
                                       113
     634 1
                                       114
     635 1
                          214
                          215
                                       115
     636 1
                          216
                                       116
     637 1
638 1
                          217
                                       117
     639 1
                        218
                                       118
D
     640 1
                          219
                                       119
     641 1
                          220
                                       120
221
                                       121
642 1
                          222
                                       122
     643 1
                          223
                                       123
     644 1
     645 1
                          224
                                       124
                                       125
                          225
     646 1
    647 1
                          226
                                       126
     648 1
                          227
                                       127
PgDn PgUp Home
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed
SHFT-F1Import Column Shift-F3AutoCHT Snirt-F5Del/Ful F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
éëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëë ESC:Quit £
p SqNo FACTOR From
                    To
                          Cond. Value L/R Description
                                                                           п
                           .23024
                                           TOP PCB LAYER 2XX TO1XX
   649 1
р
             228
                    128
                                        L
                                                                           D
   650 1
             229
                                           TOP PCB LAYER 2XX TO1XX
                    129
                           .23024
   651 1
             230
                    130
                           .29301
                                           TOP PCB LAYER 2XX TO1XX
n
   652 1
             1601
                    1602
                           .0006276
                                        L
                                           BOTTOM PCB THERMAL LYR NODE-NODE
653 1
                           .0003138
             1601
                    1607
                                        T.
                                                                           Ħ
654 1
             1601
                    1614
                           .0007322
                                        L
                                                                           655 1
             1602
                    1603
                           .0005983
                                        L
                                                                           п
   656 1
1602
                    1607
                           .0002613
                                        L
                                                                           657 1
             1603
                    1604
                           .0006597
                                        L
                                                                           п
   658 1
             1603
                    1608
                           .0001342
                                        L
                                                                           659 1
             1604
                    1605
п
                           .0008874
                                        L
                                                                           D
   660 1
             1604
                   1609
.0000524
                                                                           .0000444
П
   661 1
             1604
                    1610
                                        L
                                                                           n
   662 1
             1604
                    1611
                           .0000560
                                        L
n
                                                                           D
   663 1
             1605
                    1606
                           .000536
Τ.
                                                                           Ħ
664 1
             1605
                    1612
                           .0000524
                           .0004594
665 1
             1606
                    1617
                                        L
                                                                           Б
   666 1
             1606
                    1613
                           .0002978
                                        L
CTRL-FlImport ITAS_NC
                       ALT-F3AutoMLI
                                       UDC Allowed
                                                               PgDn PgUp Home
SHFT-FlImport Column
                      Shift-F3AutoCHT
                                       Shift-F5Del/Pur
                                                                     End
    FlSave/Purge
                   F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
éeë Ctrl:Copyeeeeeeeeeee ITAS Conductor Data Entry eeeeeeeeeeeee ESC:Ouit £
p SqNo FACTOR From
                    To
                          Cond. Value L/R Description
D
  667 1
             1607
                    1608
                           .0002992
                                        T.
                                           BOTTOM PCB THERMAL LYR NODE-NODE
668 1
             1607
                    1614
                           .0001861
                                        L
   669 1
                          .0002780
1608
                    1609
                                        Τ.
                                                                           \overline{\mathbf{c}}
   670 1
             1608
                    1615
                          .0001340
                                                                           п
   671 1
             1609
                    1610
                           .0009901
                                        L
                                                                           -
   672 1
             1609
                    1615
                          .0000524
                                        L
                                                                           673 1
             1610
                    1611
                          .0009178
                                        Τ.
                                                                           73
   674 1
             1610
                    1615
                          .0000444
   675 1
ь
             1611
                    1612
                          .000804
                                        L
                                                                           b
   676 1
1611
                    1615
                          .0000560
                                        L
   677 1
             1612
                    1613
                          .000268
                                        L
                                                                           678 1
n
             1612
                    1616
                          .0000596
₽
   679
      1
             1613
                    1617
                          .0003829
                                        L
                                                                           п
  680 1
             1613
                    1616
                          .0003752
                                        L
                                                                           D
  681 1
             1614
                    1615
                          .000469
  682 1
             1615
                          .0003450
                    1616
                                        T.
  683 1
             1616
                    1617
                          .000469
                                          BOTTOM PCB BTM POLY LYR NODE-NODE D
  684 1
             1501
                    1502
                          .009055
                                        T.
CTRL-Flimport ITAS NC ALT-F3AutoMLI UDC Allowed
                                                               PgDn PgUp Home
SHFT-FlImport Column
                     Shift-F3AutoCHT
                                       Shift-F5Del/Pur
                                                                    End
    FlSave/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
eëë Ctrl:Copyeeëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëëë ESC:Quit £
                          Cond. Value L/R Description
m SqNo FACTOR From
                   To
                                          BOTTOM PCB BTM POLY LYR NODE-NODE
                          .004528
                                        L
             1501
                    1507
  685 1
0
                    1514
                           .010570
             1501
  686 1
                           .008631
             1502
                    1503
  687 1
                                        L
             1502
                    1507
                           .002684
Б
  688 1
                                                                            Ħ
                    1504
                           .009516
             1503
  689 1
                           .001929
  690 1
             1503
                    1508
п
             1504
                    1505
                           .01280
                                        L
  691 1
                           .000752
                    1509
             1504
п
  692 1
                                        T.
             1504
                    1510
                           .000644
   693 1
п
                           .000860
                    1511
             1504
   694 1
.007733
                                        T.
             1505
                    1506
   695 1
                           .000860
                    1512
   696 1
             1505
n
                    1517
                           .006629
                                        L
             1506
n
   697 1
                           .004293
                    1513
             1506
  698 1
                           .004315
                                        L
             1507
                    1508
699 1
                           .002416
                    1514
   700 1
             1507
D
                           .004033
                    1509
                                        Τ.
             1508
  701 1
ō
                    1515
                           .00232
702 1
             1508
                                                               PgDn PgUp Home
                                       UDC Allowed
CTRL-F1Import ITAS_NC
                       ALT-F3AutoMLI
                                                                     End
                                       Shift-F5Del/Pur
                      Shift-F3AutoCHT
SHFT-F1Import Column
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit £
                           Cond. Value
                                      L/R Description
n SqNo FACTOR From
                                           BOTTOM PCB BTM POLY LYR NODE-NODE D
                           .01429
                                        L
                    1510
   703 1
             1509
                           .000691
             1509
                    1515
   704 1
                                                                            .01324
                                        L
             1510
                    1511
  705 1
                                                                            .00058
   706 1
             1510
                    1515
                                                                            \Box
             1511
                    1512
                           .0116
                                        L
   707 1
n
                           .000774
                    1515
   708 1
             1511
                                                                            L
                    1513
                           .003867
   709 1
             1512
.000774
   710 1
             1512
                    1516
                           .003314
                    1517
             1513
   711 1
1516
                           .003864
   712 1
             1513
   713 1
             1514
                    1515
                           .00677
п
                    1516
                           .004980
□
   714 1
             1515
             1516
                    1517
                           .00677
   715 1
BOTTOM PCB GRND LYR NODE-NODE
                    1402
                           .000628
             1401
716 1
             1401
                    1407
                           .000314
717
                           .000732
             1401
                    1414
   718 1
.000598
   719 1
             1402
                    1403
                           .000261
             1402
                    1407
   720 1
PgDn PgUp Home
                                       UDC Allowed
CTRL-FlImport ITAS_NC
                        ALT-F3AutoMLI
                      Shift-F3AutoCHT
                                       Shift-F5Del/Pur
SHFT-FlImport Column
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     F1Save/Purge
```

```
eëë Ctrl:Copyeeëeeeeeeee ITAS Conductor Data Entry eeeeeeeeeeeee ESC:Quit f
m SqNo FACTOR From
                           Cond. Value L/R Description
                    To
                                                                             1404
   721 1
             1403
                           .0006597
                                        L
                                            BOTTOM PCB GRND LYR NODE-NODE
   722 1
             1403
                    1408
                           .0001342
                                                                             77
m
   723 1
             1404
                    1405
                           .0008874
                                         L
D
   724 1
             1404
                    1409
                           .0000524
                                         L
п
                                                                             n
   725 1
             1404
                    1410
                           .0000444
                                         T.
                                                                             ь
             1404
                    1411
                           .0000596
                                         L
726 1
                                                                             D
             1405
                    1406
   727 1
                           .0005366
                                         L
В
                                                                             п
             1405
                    1412
                           .0000524
n
   728 1
                                                                             р
             1406
                    1417
n
  729 1
                           .0004594
                                         L
                                                                             1406
                    1413
                                         L
n
  730 1
                           .0002978
                                                                             D
  731 1
             1407
                    1408
                           .0002991
                                         L
п
                                                                             D
  732 1
             1407
                   1414
                           .0001861
n
                                                                             ū
             1408
   734 1
             1408
                    1415
                           .0001340
                                         L
                                                                             п
10
             1409
D
   735 1
                    1410
                           .0009901
                                         L
                                                                             736 1
             1409
                    1415
                           .0000524
L
                                                                             D
п
   737 1
             1410
                    1411
                           .0009178
                                         L
                                                                             р
   738 1
             1410
                    1415
                           .0000444
CTRL-Flimport ITAS NC
                       ALT-F3AutoMLI
                                        UDC Allowed
                                                                PgDn PgUp Home
SHFT-FlImport Column
                      Shift-F3AutoCHT
                                        Shift-F5Del/Pur
                                                                      End
    FlSave/Purge
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
eëë Ctrl:Copyëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëë ESC:Quit £
□ SqNo FACTOR From
                    To
                           Cond. Value L/R Description
                                                                             739 1
             1411
                    1412
                           .000804
                                           BOTTOM PCB GRND LYR NODE-NODE
D
                                        L
                                                                             740 1
             1411
                    1415
                           .0000596
b
                                                                             n
  741 1
             1412
                    1413
                           .000268
\mathbf{p}
                                         L
                                                                             742 1
             1412
                    1416
                           .0000596
                                        T.
                                                                             n
D
   743 1
             1413
                    1417
                           .0003829
                                         L
                                                                             п
  744 1
             1413
                    1416
                           .0003752
                                        L
                                                                             \mathbf{p}
  745 1
             1414
                    1415
                          .000469
D
   746 1
             1415
                    1416
                           .0003450
                                        T.
                                                                             77
747 1
             1416
                    1417
                           .000469
                                        L
  748 1
             1301
                    1302
                          .009055
                                        L
  749 1
             1301
                          .004528
TI.
                    1307
                                           BOTTOM PCB MID POLY LYR NODE-NODE
750 1
             1301
                          .01060
                    1314
  751 1
             1302
                    1303
                          .00863
L
                                                                             b
752 1
             1302
                    1307
                          .002684
                                                                             ь
                    1304
753 1
             1303
                          .009516
                                        L
                                                                             754 1
             1303
                    1308
                           .001929
                                        L
                                                                             .01280
  755 1
             1304
1305
                                        Τ.
                                                                             D
D
  756 1
             1304
                    1309
                           .000752
                                        L
aeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
CTRL-FlImport ITAS NC
                       ALT-F3AutoMLI UDC Allowed
                                                                PgDn PgUp Home
SHFT-FlImport Column
                                       Shift-F5Del/Pur
                      Shift-F3AutoCHT
                                                                      End
    FlSave/Purge
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                          Cond. Value L/R Description
                   TΩ
m SqNo FACTOR From
                                       L BOTTOM PCB MID POLY LYR NODE-NODE D
            1304
                   1310
                          .000644
  757 l
\mathbf{n}
                                       L
             1304
                   1311
                          .000860
В
  758 1
                                                                           0
                          .007733
                   1306
  759 1
             1305
1305
                   1312
                          .000860
  760 1
\Box
             1306
                   1317
                          .006629
D
  761 1
                          .004293
                                                                           1306
                   1313
762 1
                                                                           n
                   1308
                          .004315
  763 1
             1307
Ħ
                          .002416
  764 1
             1307
                   1314
                   1309
             1308
                          .004033
  765 1
n
                                                                           b
  766 1
             1308
                   1315
                          .00232
1309
                   1310
                          .01439
р
  767 1
                                                                           D
                          .000691
             1309
                   1315
  768 1
             1310
                   1311
                          .01324
7
  769 1
                                                                           n
                          .00058
  770 1
             1310
                   1315
D
                   1312
                          .0116
             1311
  771 1
-000774
772 1
             1311
                   1315
                   1313
                          .003867
  773 1
             1312
п
                   1316
                           .000774
             1312
  774 1
PgDn PgUp Home
CTRL-Flimport ITAS NC
                       ALT-F3AutoMLI
                                       UDC Allowed
                                                                    End
                                       Shift-F5Del/Pur
SHFT-FlImport Column
                     Shift-F3AutoCHT
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                          Cond. Value L/R Description
m SqNo FACTOR From
                   To
                                       L BOTTOM PCB MID POLY LYR NODE-NODE E
  775 1
                   1317
                          .003314
             1313
D
  776 1
             1313
                   1316
                          .003864
Ė
             1314
                   1315
                          .00677
  777 1
.004980
  778 1
             1315
                   1316
                    1317
                          .00677
  779
             1316
      1
BOTTOM PCB TOP Cu LYR NODE-NODE
                   1202
                          .0006276
             1201
780 1
             1201
                   1207
                          .0003138
                                        L
  781 1
             1201
                   1214
                          .0007322
  782 1
Ħ
                          .0005983
  783 1
             1202
                   1203
                                        L
                                                                           п
                          .0002613
             1202
                   1207
784 1
                                                                           .0006597
                                        L
  785 1
             1203
                   1204
                          .0001342
  786 1
             1203
                   1208
.0008874
                   1205
787 1
             1204
  788 1
             1204
                   1209
                          .0000524
1204
                   1210
                          .0000444
  789 1
\mathbf{n}
  790 1
             1204
                    1211
                          .0000596
1206
                          .000536
             1205
791 1
                           .0000524
  792 1
             1205
                   1212
ALT-F3AutoMLI UDC Allowed
                                                               PgDn PgUp Home
CTRL-FlImport ITAS_NC
SHFT-F1Import Column
                                       Shift-F5Del/Pur
                                                                    End
                     Shift-F3AutoCHT
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
eëë Ctrl:Copyeeëëeeeeeee ITAS Conductor Data Entry eeeeeeeeeeeee ESC:Quit f
m SqNo FACTOR From
                   To
                          Cond. Value L/R Description
D
  793 1
             1206
                   1217
                          .0004594
                                       L
                                          BOTTOM PCB TOP Cu LYR NODE-NODE
794 1
             1206
                   1213
                          .0002978
                                                                          795 1
             1207
                   1208
                          .0002992
796 1
             1207
                   1214
                          -0001861
                                       L
                                                                          .
                          .0002796
   797
             1208
                   1209
                                                                          D
D
  798 1
             1208
                   1215
                          .0001340
                                       L
D
                                                                          Б
799 1
             1209
                   1210
                          .0009901
                                                                          800 1
             1209
                   1215
                                       L
                                                                          п
                          .0000524
п
  801
      1
             1210
                   1211
                          .0009178
                                       L
                                                                          802 1
             1210
                   1215
n
                          .0000444
                                       L
                                                                          D
803 1
             1211
                   1212
                          .000804
                                       L
                                                                          D
             1211
  804 1
                   1215
                          .0000596
                                       L
805 1
             1212
                   1213
                          .000268
                                                                          806 1
             1212
                   1216
                          .0000596
                                       T.
                                                                          10
807 1
             1213
                   1217
                          .0003829
                                                                          D
  808 1
             1213
                   1216
                          .0003752
                                       L
п
  809 1
             1214
                   1215
                          .000469
                                                                          810 1
             1215
                   1216
                          .0003450
                                       L
                                                                          CTRL-Flimport ITAS NC
                                      UDC Allowed
                       ALT-F3AutoMLI
                                                             PgDn PgUp Home
SHFT-FlImport Column
                     Shift-F3AutoCHT
                                      Shift-F5Del/Pur
                                                                   End
    F1Save/Purge
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
eëë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëë ESC:Quit £
m SqNo FACTOR From
                   To
                          Cond. Value L/R Description
                                                                          р
                          .000469
  811 1
            1216
                   1217
                                      L BOTTOM PCB TOP Cu LYR NODE-NODE
Б
  812 1
            1101
                   1102
                          .009055
                                       Τ.
                                          BOTTOM PCB TOP POLY LYR NODE-NODE D
813 1
            1101
                   1107
                          .004528
  814 1
            1101
                   1114
                          .010570
                                                                          815 1
             1102
                   1103
                          .008631
                                                                          п
  816 1
1102
                   1107
                          .002684
                                       L
                                                                         10
  817 1
             1103
                   1104
                          .009516
D
                                                                         n
  818 1
            1103
                   1108
                          .001929
                                       L
                                                                         819 1
            1104
                   1105
                          .012804
820 1
            1104
                   1109
                          .000752
                                                                         п
.
  821 1
            1104
                   1110
                          .000644
                                                                          822 1
            1104
                   1111
                          .0008596
                                                                         1105
D
  823 1
                   1106
                          .007733
                                                                         n
                          .0008596
  824 1
             1105
                   1112
825 1
            1106
                   1117
.006629
                                       L
                                                                         п
  826 1
            1106
                   1113
                          .004293
                          .004315
827 1
            1107
                   1108
                                       L
                                                                         D
828 1
            1107
                   1114
                          .002416
CTRL-Flimport ITAS NC
                      ALT-F3AutoMLI UDC Allowed
                                                             PgDn PgUp Home
SHFT-Fllmport Column
                     Shift-F3AutoCHT
                                     Shift-F5Del/Pur
                                                                   End
    FlSave/Purge
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit f
                           Cond. Value L/R Description
n SqNo FACTOR From
                                         L BOTTOM PCB TOP POLY LYR NODE-NODE D
                           .004033
                     1109
             1108
  829 1
                            .00232
             1108
                     1115
  830 1
                            .01429
             1109
                     1110
  831 1
                                                                               n
                           .000691
             1109
                     1115
   832 1
                                                                               п
                           .013242
             1110
                     1111
   833 1
                                                                               п
                            .00058
             1110
                     1115
   834 1
                           .0116
             1111
                     1112
   835 1
                           .000774
             1111
                    1115
   836 1
77
                           .003867
             1112
                    1113
   837 1
                           .000774
             1112
                     1116
   838 1
D
             1113
                     1117
                           .003314
   839 1
D
                           .003864
             1113
                    1116
п
   840 1
                           .00677
             1114
                     1115
   841 1
                            .004980
                                          L
             1115
                     1116
\overline{\mathbf{D}}
   842 1
             1116
                     1117
                            .00677
   843 1
L BOTTOM PCB LAYER 16XX TO 15XX
                     1501
                            1.53206
             1601
   844 1
Ď
                                          L BOTTOM PCB LAYER 16XX TO 15XX
L BOTTOM PCB LAYER 16XX TO 15XX
                           .89779
              1602
                    1502
   845 1
                     1503
                            .64634
              1603
   846 1
PgDn PgUp Home
                                         UDC Allowed
                        ALT-F3AutoMLI
CTRL-F1Import ITAS_NC
                                                                        End
                                         Shift-F5Del/Pur
SHFT-F1Import Column
                       Shift-F3AutoCHT
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                            Cond. Value L/R Description
m SqNo FACTOR From
                           .75416
                                         L BOTTOM PCB LAYER 16XX TO 15XX
                     1504
  847 1
              1604
                                          L BOTTOM PCB LAYER 16XX TO 15XX
                            .28726
              1605
                     1505
   848 1
                                         L BOTTOM PCB LAYER 16XX TO 15XX
                            1.43631
   849 1
              1606
                     1506
                                         L BOTTOM PCB LAYER 16XX TO 15XX
                            .44889
              1607
                     1507
   850 1
П
                                         L BOTTOM PCB LAYER 16XX TO 15XX
L BOTTOM PCB LAYER 16XX TO 15XX
                            .323276
                     1508
   851 1
              1608
                                                                                Ħ
                            .12517
              1609
                     1509
   852 1
                                         L BOTTOM PCB LAYER 16XX TO 15XX
                           .10763
                     1510
   853 1
              1610
0
                                         L BOTTOM PCB LAYER 16XX TO 15XX
L BOTTOM PCB LAYER 16XX TO 15XX
   854 1
              1611
                     1511
                           .14363
                     1512
                            .14363
              1612
   855 1
                            .71815
                                         L BOTTOM PCB LAYER 16XX TO 15XX
              1613
                     1513
п
   856 1
                                         L BOTTOM PCB LAYER 16XX TO 15XX
                     1514
                            1.04774
   857 1
              1614
L BOTTOM PCB LAYER 16XX TO 15XX
L BOTTOM PCB LAYER 16XX TO 15XX
                            1.63375
                     1515
              1615
   858 1
                            2.0108
              1616
                     1516
   859 1
n
                                         L BOTTOM PCB LAYER 16XX TO 15XX
                            1.53206
                     1517
   860 1
              1617
                                         L BOTTOM PCB LAYER 15XX TO 14XX
L BOTTOM PCB LAYER 15XX TO 14XX
                     1401
                           1.53206
   861 1
              1501
.89779
              1502
                     1402
   862 1
                                         L BOTTOM PCB LAYER 15XX TO 14XX
                            .64634
                     1403
   863 1
              1503
                                          L BOTTOM PCB LAYER 15XX TO 14XX
              1504
                     1404
                            .75416
   864 1
PgDn PgUp Home
CTRL-FlImport ITAS_NC ALT-F3AutoMLI
                                        UDC Allowed
                                                                        End
SHFT-FlImport Column
                       Shift-F3AutoCHT
                                         Shift-F5Del/Pur
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     F1Save/Purge
```

```
eëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëëë ESC:Quit f
m SqNo FACTOR From
                      To
                             Cond. Value L/R Description
                                            L BOTTOM PCB LAYER 15XX TO 14XX
                      1405
   865 1
               1505
                              .28726
                                             L BOTTOM PCB LAYER 15XX TO 14XX
                      1406
   866 1
               1506
                              1.43631
                      1407
                                             L BOTTOM PCB LAYER 15XX TO 14XX
   867 1
               1507
                              .44889
                              .32327
               1508
                      1408
                                            L BOTTOM PCB LAYER 15XX TO 14XX
   868 1
                             .12517
                                            L BOTTOM PCB LAYER 15XX TO 14XX
               1509
                      1409
   869 1
                                            L BOTTOM PCB LAYER 15XX TO 14XX L BOTTOM PCB LAYER 15XX TO 14XX
   870 1
               1510
                      1410
n
   871 1
               1511
                      1411
                              .14363
                                                                                     D
n
                              .14363
                                            L BOTTOM PCB LAYER 15XX TO 14XX
   872 1
               1512
                      1412
                                            L BOTTOM PCB LAYER 15XX TO 14XX
   873 1
               1513
                      1413
                              .71815
L BOTTOM PCB LAYER 15XX TO 14XX L BOTTOM PCB LAYER 15XX TO 14XX
   874 1
               1514
                      1414
                              1.04774
1.63375
   875 1
               1515
                      1415
р
                                            L BOTTOM PCB LAYER 15XX TO 14XX
                             2.01083
   876 1
               1516
                      1416
L BOTTOM PCB LAYER 15XX TO 14XX
                            1.53206
1.53206
   877 1
               1517
                      1417
n
                                            L BOTTOM PCB LAYER 14XX TO13XX
L BOTTOM PCB LAYER 14XX TO13XX
   878 1
               1401
                      1301
7
   879 1
               1402
                      1302
                              .89779
п
                                            L BOTTOM PCB LAYER 14XX TO13XX
   880 1
               1403
                      1303
                              .64634
                                            L BOTTOM PCB LAYER 14XX TO13XX
L BOTTOM PCB LAYER 14XX TO13XX
                      1304
                              .75416
.28726
п
   881 1
               1404
   882 1
               1405
                      1305
PgDn PgUp Home
CTRL-Filmport ITAS_NC ALT-F3AutoMLI UDC Allowed
SHFT-FlImport Column
                        Shift-F3AutoCHT
                                            Shift-F5Del/Pur
                                                                             End
     FlSave/Purge
                      F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
èëë Ctrl:Copyëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëë ESC:Quit £
p SqNo FACTOR From
                              Cond. Value L/R Description
                      To
  883 1
               1406
                      1306
                            1.43631
                                            L BOTTOM PCB LAYER 14XX TO13XX
                                             L BOTTOM PCB LAYER 14XX TO13XX
L BOTTOM PCB LAYER 14XX TO13XX
                              .44889
   884 1
               1407
                      1307
   885 1
               1408
                      1308
                              .32327
                                                                                     .12517
.10763
.14363
.14363
                                            L BOTTOM PCB LAYER 14XX TO13XX
   886 1
               1409
                      1309
                                           L BOTTOM PCB LAYER 14XX TO13XX
L BOTTOM PCB LAYER 14XX TO13XX
L BOTTOM PCB LAYER 14XX TO13XX
887 1
               1410
                      1310
   888 1
               1411
                      1311
D
   889 1
               1412
                      1312
890 1
               1413
                     1313
                            .71815
                                           L BOTTOM PCB LAYER 14XX TO13XX
1.04774
                                            L BOTTOM PCB LAYER 14XX TO13XX
L BOTTOM PCB LAYER 14XX TO13XX
   891 1
               1414
                      1314
n
892 1
               1415
                      1315
                             2.01083
                                            L BOTTOM PCB LAYER 14XX TO13XX
   893 1
                      1316
               1416
D
894 1
               1417
                      1317
                             1.53206
                                            L BOTTOM PCB LAYER 14XX TO13XX
                            1.53206
1.53206
                                            L BOTTOM PCB LAYER 13XX TO 12XX
L BOTTOM PCB LAYER 13XX TO 12XX
895 1
               1301
                      1201
                           .89779
.64634
.75416
.28726
896 1
               1302
                      1202
                             .89779
                                            L BOTTOM PCB LAYER 13XX TO 12XX
   897 1
               1303
                      1203
                                           L BOTTOM PCB LAYER 13XX TO 12XX
L BOTTOM PCB LAYER 13XX TO 12XX
L BOTTOM PCB LAYER 13XX TO 12XX
.
   898 1
               1304
                      1204
   899 1
               1305
                      1205
   900 1
               1306
                      1206
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                                       PgDn PgUp Home
                                                                             End
     F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit f
                           Cond. Value L/R Description
g SqNo FACTOR From
                     To
                                          L BOTTOM PCB LAYER 13XX TO 12XX
                            .44889
                     1207
             1307
  901 1
                                             BOTTOM PCB LAYER 13XX TO 12XX
                            .32327
                                          L
              1308
                     1208
  902 1
                                          L BOTTOM PCB LAYER 13XX TO 12XX
                     1209
                            .12517
             1309
   903 1
                                         L BOTTOM PCB LAYER 13XX TO 12XX
L BOTTOM PCB LAYER 13XX TO 12XX
              1310
                     1210
                            .10763
  904 1
              1311
                     1211
                            .14363
  905 1
                                         L BOTTOM PCB LAYER 13XX TO 12XX
                            .14363
                     1212
              1312
   906 1
                                         L BOTTOM PCB LAYER 13XX TO 12XX
L BOTTOM PCB LAYER 13XX TO 12XX
                     1213
                            .71815
   907 1
              1313
1.04774
             1314
                     1214
   908 1
                                         L BOTTOM PCB LAYER 13XX TO 12XX
                            1.63375
             1315
                     1215
  909 1
                                          L BOTTOM PCB LAYER 13XX TO 12XX
Ö
                           2.01083
             1316
                     1216
   910 1
L BOTTOM PCB LAYER 13XX TO 12XX
L BOTTOM PCB LAYER 12XX TO11XX
                           1.53206
              1317
                     1217
   911 1
1101
                            1.53206
             1201
   912 1
                                         L BOTTOM PCB LAYER 12XX TO11XX
                            .89779
   913 1
              1202
                     1102
п
                                         L BOTTOM PCB LAYER 12XX TO11XX
                     1103
                            .64634
             1203
   914 1
                                         L BOTTOM PCB LAYER 12XX TO11XX
                            .75416
              1204
                     1104
   915 1
L BOTTOM PCB LAYER 12XX TO11XX
                     1105
                            .28726
   916 1
              1205
                                          L BOTTOM PCB LAYER 12XX TO11XX
                            1.43631
              1206
                     1106
  917 1
Þ
                                          L BOTTOM PCB LAYER 12XX TO11XX
                     1107
                            .44889
              1207
   918 1
PgDn PgUp Home
                                        UDC Allowed
CTRL-Flimport ITAS_NC
                        ALT-F3AutoMLI
                                                                         End
                                         Shift-F5Del/Pur
                       Shift-F3AutoCHT
SHFT-FlImport Column
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit £
                            Cond. Value L/R Description
n SqNo FACTOR From
                     To
                                         L BOTTOM PCB LAYER 12XX TO11XX
                            .32327
                     1108
  919 1
              1208
                                          L BOTTOM PCB LAYER 12XX TO11XX
                            .12517
                     1109
   920 1
              1209
                                          L BOTTOM PCB LAYER 12XX TO11XX
              1210
                     1110
                            .10763
   921 1
                                          L BOTTOM PCB LAYER 12XX TO11XX
                     1111
                            .14363
   922 1
              1211
                                         L BOTTOM PCB LAYER 12XX TO11XX
              1212
                     1112
                            .14363
   923 1
                                         L BOTTOM PCB LAYER 12XX TO11XX
              1213
                     1113
                            .71815
   924 1
                                          L BOTTOM PCB LAYER 12XX TO11XX
L BOTTOM PCB LAYER 12XX TO11XX
                            1.04774
              1214
                     1114
   925 1
                            1.63375
                     1115
              1215
   926 1
                                         L BOTTOM PCB LAYER 12XX TO11XX
                            2.01083
   927
              1216
                     1116
L BOTTOM PCB LAYER 12XX TO11XX
L EQUIV PIN CONDUCTANCE 3.01
                            1.53206
              1217
                     1117
928 1
                            .000296
                     101
   929 1
              2011
                                          L EQUIV PIN CONDUCTANCE 3.01
                            .000197
              2012
                     201
-
   930 1
                                         L EQUIV PIN CONDUCTANCE 3.01
                            .000296
                     301
   931
              2013
                                          L EQUIV PIN CONDUCTANCE 3.01
L EQUIV PIN CONDUCTANCE 3.01
              2014
                     401
                            .000176
   932 1
E
                            .000296
                     501
   933 1
              2015
                                          L EOUIV PIN CONDUCTANCE 3.01
                            .000197
   934 1
              2016
                     601
L EQUIV CONDUCTANCE FOR 3.02
L EQUIV CONDUCTANCE FOR 3.02
                            .000296
                     102
   935 1
              2021
.000197
   936 1
              2022
                     202
PgDn PgUp Home
CTRL-Flimport ITAS_NC ALT-F3AutoMLI UDC Allowed
                                        Shift-F5Del/Pur
                                                                         End
SHFT-Filmport Column Shift-F3AutoCHT
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     F1Save/Purge
```

```
éëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëë ESC:Quit £
m SqNo FACTOR From
                      To
                              Cond. Value L/R Description
                              .000296
                                            L EQUIV CONDUCTANCE FOR 3.02
  937 1
                      302
            2023
                                            L EQUIV CONDUCTANCE FOR 3.02
L EQUIV CONDUCTANCE FOR 3.02
L EQUIV CONDUCTANCE FOR 3.02
                              .000197
n
  938 1
               2024
                       402
   939 1
               2025
                      502
                              .000296
п
                              .000197
   940 1
                      602
2026
                                            L EQUIV COND FOR 3.03
   941 1
               2031
                      103
                              .000296
                                           L EQUIV COND FOR 3.03
L EQUIV COND FOR 3.03
                              .000197
                      203
               2032
   942 1
n
   943 1
               2033
                      303
                              .000296
                             .000197
                                            L EQUIV COND FOR 3.03
   944 1
              2034
                     403
L EQUIV COND FOR 3.03
2
   945 1
              2035 503
                             .000296
                                                                                     р
                    603
                                           L EQUIV COND FOR 3.03
L EQUIV PIN COND FOR 3.04
   946 1
               2036
                             .000197
947 1
               2041
                      104
                             .000296
                                                                                     п
L EQUIV PIN COND FOR 3.04
   948 1
              2042 204
                             .000198
L EQUIV PIN COND FOR 3.04
                     304
  949 1
               2043
                             .000296
\mathbf{p}
                            .000198
                                            L EQUIV PIN COND FOR 3.04
L EQUIV PIN COND FOR 3.04
950 1
               2044
                      404
                             .000296
п
   951 1
               2045
                      504
                                            L EQUIV PIN COND FOR 3.04
                             .000198
   952 1
               2046
                      604
                           .000296
.000197
                                            L EQUIV PIN COND FOR 3.05
L EQUIV PIN COND FOR 3.05
                      105
p 953 1
               2051
               2052
                      205
   954 1
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                           PgDn PgUp Home
SHFT-F1Import Column Shift-F3AutoCHT
                                                                             End
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
eeë Ctrl:Copyeeëeeeeeee ITAS Conductor Data Entry eeeeeeeeeeee ESC:Quit f
p SqNo FACTOR From
                              Cond. Value L/R Description
                      To
 955 1 2053
                      305
                             .000296 L EQUIV PIN COND FOR 3.05
                                            L EQUIV PIN COND FOR 3.05
  956 1
              2054
                      405
                             .000197
D
                                           L EQUIV PIN COND FOR 3.05
L EQUIV PIN COND FOR 3.05
              2055
                      505
                             .000296
   957 1
                             .000197
  958 1
              2056
                      605
Ε.
                                           L EQUIV PIN COND FOR 3.06
  959 1
              2061
                    106
                             .000296
                             .000198
.000296
.000198
.000296
.000198
                                           L EQUIV PIN COND FOR 3.06
L EQUIV PIN COND FOR 3.06
                      206
960 1
               2062
   961 1
               2063
                      306
L EQUIV PIN COND FOR 3.06
   962 1
              2064 406
                                           L EQUIV PIN COND FOR 3.06
                     506
D
  963 1
               2065
                                           L EQUIV PIN COND FOR 3.06
L EQUIV PIN COND FOR 3.07
   964 1
               2066
                     606
                             .000296
   965 1
              2071
                      107
.000197
              2072 207
                                           L EQUIV PIN COND FOR 3.07
  966 1
                                           L EQUIV PIN COND FOR 3.07
L EQUIV PIN COND FOR 3.07
L EQUIV PIN COND FOR 3.07
                             .000296
              2073 307
967 1
   968 1
               2074
                      407
L EQUIV PIN COND FOR 3.07
L EQUIV PIN COND FOR 3.07
                             .000296
   969 1
              2075
                      507
b
  970 1
              2076
                     607
                             .000197
                           .000296 L EQUIV PIN COND FOR 3.08
.000197 L EQUIV PIN COND FOR 3.08
   971 1
              2081
                      108
                    208
   972 1
              2082
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                              PgDn PgUp Home
SHFT-FlImport Column Shift-F3AutoCHT Shift-F5Del/Pur End F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F1OSearch
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit f
                            Cond. Value L/R Description
m SqNo FACTOR From
                     To
                                           L EQUIV PIN COND FOR 3.08
L EQUIV PIN COND FOR 3.08
                            .000296
                     308
           2083
  973 1
974 1
              2084
                     408
                             .000197
                                           L EQUIV PIN COND FOR 3.08
                            .000296
              2085
                     508
  975 1
L EQUIV PIN COND FOR 3.08
L EQUIV PIN COND FOR 3.09
                     608
                            .000197
              2086
  976 1
.000296
              2091
                     109
  977 1
                                          L EQUIV PIN COND FOR 3.09
                            .000197
              2092
                     110
  978 1
п
                                          L EQUIV PIN COND FOR 3.09
L EQUIV PIN COND FOR 3.09
                            .000296
   979 1
              2093
                     111
.000197
                     112
              2094
п
   980 1
                                                                                 D
                                          L EQUIV PIN COND FOR 3.09
                            .000296
              2095
                     113
  981 1
                                          L EQUIV PIN COND FOR 3.09
                                                                                  .000197
              2096
                     114
   982 1
п
                                          L EQUIV PIN COND FOR 3.10
L EQUIV PIN COND FOR 3.10
                            .000296
             2101
                     110
   983 1
.000197
                     210
              2102
                                                                                 77
                                          L EQUIV PIN COND FOR 3.10
              2103
                     310
                            .000296
  985 1
п
                                          L EQUIV PIN COND FOR 3.10
                     410
                            .000197
              2104
   986 1
L EQUIV PIN COND FOR 3.10
L EQUIV PIN COND FOR 3.10
                            .000296
              2105
                     510
   987 1
                                                                                 n
                             .000197
              2106
                     610
  988 1
                                           L EQUIV PIN COND FOR 3.11
L EQUIV PIN COND FOR 3.11
                             .000296
              2111
                     111
   989 1
                             .000197
              2112
                     211
   990 1
PgDn PgUp Home
                        ALT-F3AutoMLI
                                          UDC Allowed
CTRL-F1Import ITAS NC
                                          Shift-F5Del/Pur
                                                                          End
                       Shift-F3AutoCHT
SHFT-FlImport Column
                      F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
eëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit £
                             Cond. Value L/R Description
m SqNo FACTOR From
                     To
                                           L EQUIV PIN COND FOR 3.11
                             .000296
                     311
              2113
  991 1
5
                                           L EQUIV PIN COND FOR 3.11
                            .000197
                     411
   992 1
              2114
                                           L EQUIV PIN COND FOR 3.11
L EQUIV PIN COND FOR 3.11
                            .000296
              2115
                     511
   993 1
                            .000197
                     611
              2116
   994 1
                            .000296
                                           L EQUIV PIN COND FOR 3.12
              2121
                     112
   995 1
n
                                           L EQUIV PIN COND FOR 3.12
L EQUIV PIN COND FOR 3.12
L EQUIV PIN COND FOR 3.12
                                                                                  .
                            .000197
              2122
                     212
b
   996 1
                            .000296
              2123
                     312
   997 1
                            .000197
              2124
                     412
   998 1
n
                                          L EQUIV PIN COND FOR 3.12
                            .000296
                     512
   999 1
              2125
                                           L EQUIV PIN COND FOR 3.12
L EQUIV PIN COND FOR 2.01
                                                                                  77
                     612
                            .000197
n 1000 1
              2126
                           .000296
                     113
p 1001 1
              2131
                                          L EQUIV PIN COND FOR 2.01
                                                                                  10
                            .000197
                     213
p 1002 1
              2132
                                          L EQUIV PIN COND FOR 2.01
                                                                                  .000296
                     313
              2133
□ 1003 1
                                           L EQUIV PIN COND FOR 2.01
                            .000197
p 1004 1
              2134
                      413
                                           L EQUIV PIN COND FOR 2.01
                            .000296
              2135
                     513
E 1005 1
                                           L EQUIV PIN COND FOR 2.01
                             .000197
n 1006 1
              2136
                      613
                                          L EQUIV PIN COND FOR 2.02
L EQUIV PIN COND FOR 2.02
              2141
                     114
                            .000296
m 1007 1
                             .000197
                     214
p 1008 1
              2142
PgDn PgUp Home
CTRL-F1Import ITAS_NC ALT-F3AutoMLI
                                          UDC Allowed
                                          Shift-F5Del/Pur
                                                                           End
SHFT-FlImport Column Shift-F3AutoCHT
     FlSave/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit £
                         Cond. Value L/R Description
p SqNo FACTOR From
                   To
                                      L EQUIV PIN COND FOR 2.02
p 1009 1
            2143
                   314
                         .000296
                                         EQUIV PIN COND FOR 2.02
                          .000197
n 1010 1
             2144
                   414
                                      L EQUIV PIN COND FOR 2.02
                         .000296
n 1011 1
            2145
                   514
            2146
                   614
                         .000197
                                        EQUIV PIN COND FOR 2.02
n 1012 1
                                         EQUIV PIN COND FOR 2.03
            2151
                   115
                          .000296
m 1013 1
                                      L EQUIV PIN COND FOR 2.03
n 1014 1
            2152
                   215
                         .000197
            2153
                   315
                         .000296
                                      L EQUIV PIN COND FOR 2.03
                                                                         п
n 1015 1
                                      L EQUIV PIN COND FOR 2.03
                                                                         m 1016 1
            2154
                  415
                         .000197
                         .000296
                                      L EQUIV PIN COND FOR 2.03
                                                                         п
m 1017 1
            2155
                   515
                                      L EOUIV PIN COND FOR 2.03
                         .000197
            2156
                   615
n 1018 1
                         .000296
                                      L EQUIV PIN COND FOR 2.04
                                                                         п
p 1019 1
            2161
                   116
                         .000197
                                      L EQUIV PIN COND FOR 2.04
                                                                         216
n 1020 1
            2162
                                      L EQUIV PIN COND FOR 2.04
p 1021 1
            2163
                   316
                         .000296
                                                                         L EOUIV PIN COND FOR 2.04
                         .000197
            2164
                   416
p 1022 1
                                      L EQUIV PIN COND FOR 2.04
                                                                         п
n 1023 1
            2165
                   516
                         .000296
                                      L EQUIV PIN COND FOR 2.04
                         .000197
                                                                         2166
                   616
□ 1024 1
                                      L EQUIV PIN COND FOR 2.05
                         .000296
= 1025 1
             2171
                   117
                   217
                          .000197
                                      L EOUIV PIN COND FOR 2.05
            2172
□ 1026 1
PgDn PgUp Home
CTRL-Flimport ITAS NC
                     ALT-F3AutoMLI UDC Allowed
                                    Shift-F5Del/Pur
                                                                  End
                     Shift-F3AutoCHT
SHFT-Flimport Column
                 F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
éëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëë ESC:Quit f
                         Cond. Value L/R Description
n SqNo FACTOR From
                   To
n 1027 1
            2173
                   317
                         .000296
                                      L EQUIV PIN COND FOR 2.05
                                      L EOUIV PIN COND FOR 2.05
p 1028 1
            2174
                   417
                         .000197
                                      L EQUIV PIN COND FOR 2.05
n 1029 1
            2175
                   517
                         .000296
                                      L EQUIV PIN COND FOR 2.05
                                                                         □ 1030 l
            2176
                   617
                         .000197
                         .000296
                                      L EQUIV PIN COND FOR 2.06
p 1031 1
            2181
                   118
                         .000197
                                      L EOUIV PIN COND FOR 2.06
= 1032 1
            2182
                   218
                                     L EQUIV PIN COND FOR 2.06
                         .000296
m 1033 1
            2183
                  318
                         .000197
                                      L EQUIV PIN COND FOR 2.06
            2184
                  418
n 1034 1
                                      L EQUIV PIN COND FOR 2.06
                         .000296
p 1035 1
            2185
                   518
                                                                         L EOUIV PIN COND FOR 2.06
                         .000197
p 1036 1
            2186
                   618
                         .000296
                                     L EQUIV PIN COND FOR 2.07
                   119
E 1037 1
            2191
                                     L EQUIV PIN COND FOR 2.07
                         .000197
            2192
                   219
                                                                         Б
E 1038 1
                                      L EQUIV PIN COND FOR 2.07
                         .000296
p 1039 1
            2193
                   319
                                                                         L EQUIV PIN COND FOR 2.07
                   419
                         .000197
E 1040 1
            2194
                                     L EQUIV PIN COND FOR 2.07
c 1041 1
            2195
                   519
                         .000296
                                      L EQUIV PIN COND FOR 2.07
            2196
                   619
                         .000197
p 1042 1
                                      L EQUIV PIN COND FOR 2.08
                         .000296
p 1043 1
            2201
                   120
                          .000197
p 1044 1
            2202
                   220
                                      L EQUIV PIN COND FOR 2.08
CTRL-Filmport ITAS_NC ALT-F3AutoMLI UDC Allowed
                                                          PgDn PgUp Home
SHFT-F1Import Column
                     Shift-F3AutoCHT
                                     Shift-F5Del/Pur
                                                                  End
    F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit £
                           Cond. Value L/R Description
p SqNo FACTOR From
                    To
                                        L EQUIV PIN COND FOR 2.08
                           .000296
                    320
             2203
 1045 1
                                           EQUIV PIN COND FOR 2.08
                           .000197
             2204
                    420
m 1046 1
                                           EOUIV PIN COND FOR 2.08
                           .000296
                    520
             2205
n 1047 1
                                           EQUIV PIN COND FOR 2.08
                           .000197
                    620
             2206
n 1048 l
                                        L EQUIV PIN COND FOR 2.09
                           .000296
             2211
                    121
p 1049 1
                                        L EQUIV PIN COND FOR 2.09
L EQUIV PIN COND FOR 2.09
                           .000197
                    221
             2212
p 1050 1
                           .000296
                    321
             2213
n 1051 1
                                        L EQUIV PIN COND FOR 2.09
                           .000197
                    421
             2214
n 1052 1
                                        L EQUIV PIN COND FOR 2.09
                           .000296
                    521
             2215
n 1053 1
                                        L EQUIV PIN COND FOR 2.09
                           .000197
                    621
             2216
m 1054 1
                                        L EQUIV PIN COND FOR 2.10
                           .000296
                    122
             2221
 1055 1
                                        L EQUIV PIN COND FOR 2.10
                    222
                           .000197
             2222
 1056 1
13
                                        L EQUIV PIN COND FOR 2.10
                           .000296
             2223
                    322
n 1057 1
                                        L EQUIV PIN COND FOR 2.10
                           .000197
                    422
             2224
p 1058 1
                                        L EQUIV PIN COND FOR 2.10
                           .000296
                    522
             2225
  1059 1
                                        L EQUIV PIN COND FOR 2.10
                           .000197
             2226
                    622
n 1060 1
                                         L EQUIV PIN COND FOR 2.11
                           .000296
                    123
             2231
m 1061 1
                                           EOUIV PIN COND FOR 2.11
                    223
                           .000197
                                         L
PgDn PgUp Home
                        ALT-F3AutoMLI
                                        UDC Allowed
CTRL-Flimport ITAS_NC
                                                                      End
                                        Shift-F5Del/Pur
                      Shift-F3AutoCHT
SHFT-Fllmport Column
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit £
                           Cond. Value L/R Description
m SqNo FACTOR From
                    To
                                         L EQUIV PIN COND FOR 2.11
                           .000296
             2233
                    323
n 1063 1
                                         L EQUIV PIN COND FOR 2.11
                           .000197
              2234
                     423
n 1064 1
                                         L EQUIV PIN COND FOR 2.11
                           .000296
                    523
              2235
m 1065 1
                                         L EQUIV PIN COND FOR 2.11
                           .000197
                    623
m 1066 1
              2236
                                         L EQUIV PIN COND FOR 2.12
                                                                             .000296
                    124
              2241
□ 1067 1
                                         L EQUIV PIN COND FOR 2.12
                           .000197
                     224
              2242
m 1068 1
                                         L EQUIV PIN COND FOR 2.12
                           .000296
              2243
                     324
p 1069 1
                                         L EQUIV PIN COND FOR 2.12
                           .000197
                     424
              2244
m 1070 1
                                         L EQUIV PIN COND FOR 2.12
                           .000296
p 1071 1
              2245
                     524
                                         L EQUIV PIN COND FOR 2.12
                           .000197
                     624
              2246
  1072 1
                                                                             п
                                         L EQUIV PIN COND FOR 2.13
                           .000296
                     125
p 1073 1
              2251
                                                                              .000197
                                        L EQUIV PIN COND FOR 2.13
              2252
                     225
n 1074 1
                                        L EQUIV PIN COND FOR 2.13
                           .000296
                     325
□ 1075 1
              2253
                                         L EQUIV PIN COND FOR 2.13
              2254
                     425
                           .000197
  1076 1
                                         L EQUIV PIN COND FOR 2.13
                                                                              D
                           .000296
                     525
              2255
n 1077 1
                                         L EQUIV PIN COND FOR 2.13
                            .000197
              2256
                     625
p 1078 1
                                         L EQUIV PIN COND FOR 2.14
L EQUIV PIN COND FOR 2.14
                           .000296
                     126
n 1079 1
              2261
                            .000197
aeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
              2262
                     226
                                                                PgDn PgUp Home
CTRL-FlImport ITAS_NC ALT-F3AutoMLI
                                        UDC Allowed
                                                                       End
                                        Shift-F5Del/Pur
SHFT-FlImport Column Shift-F3AutoCHT
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     F1Save/Purge
```

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èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit £
                                     Cond. Value L/R Description
m SqNo FACTOR From
                             To
                                                           L EQUIV PIN COND FOR 2.14
                   2263
                             326
                                      .000296
n 1081 1
                                                           L EQUIV PIN COND FOR 2.14
                                       .000197
m 1082 1
                   2264
                             426
                                                          L EQUIV PIN COND FOR 2.14
L EQUIV PIN COND FOR 2.14
                                      .000296
                   2265
                             526
p 1083 1
                                     .000197
                             626
n 1084 1
                   2266
                                                          L EQUIV PIN COND FOR 2.15
                                                                                                                2271
                             127
n 1085 1
                                     .000296
.000296
.000197
                                                         L EQUIV PIN COND FOR 2.15
                                                                                                                227
                   2272
p 1086 1
                                                         L EQUIV PIN COND FOR 2.15
L EQUIV PIN COND FOR 2.15
n 1087 1
                             327
                   2273
                             427
                   2274
n 1088 1
                            527 .000296 L EQUIV PIN COND FOR 2.15
627 .000197 L EQUIV PIN COND FOR 2.15
128 .000296 L EQUIV PIN COND FOR 2.16
228 .000197 L EQUIV PIN COND FOR 2.16
328 .000296 L EQUIV PIN COND FOR 2.16
428 .000197 L EQUIV PIN COND FOR 2.16
528 .000296 L EQUIV PIN COND FOR 2.16
628 .000197 L EQUIV PIN COND FOR 2.16
628 .000197 L EQUIV PIN COND FOR 2.16
629 .000296 L EQUIV PIN COND FOR 2.17
                                                         L EQUIV PIN COND FOR 2.15
                                       .000296
                             527
r 1089 1
                   2275
                                                                                                                p 1090 1
                  2276
                  2281
n 1091 1
                   2282
□ 1092 1
                                                                                                                п
                   2283
p 1093 1
                                                                                                                D
n 1094 1
                 2284
                  2285
p 1095 1
                   2286
n 1096 1
                                       .000296 L EQUIV PIN COND FOR 2.17
.000197 L EQUIV PIN COND FOR 2.17
                             129
                  2291
n 1097 1
n 1098 1
                   2292
                             229
PgDn PgUp Home
CTRL-Flimport ITAS_NC ALT-F3AutoMLI UDC Allowed
                                                                                                      End
                                                         Shift-F5Del/Pur
SHFT-F1Import Column Shift-F3AutoCHT
                          F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
       FlSave/Purge
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                             To
                                       Cond. Value L/R Description
m SqNo FACTOR From
                                                          L EQUIV PIN COND FOR 2.17
                             329
                                       .000296
p 1099 1
                   2293
                                                           L EQUIV PIN COND FOR 2.17
                                       .000197
p 1100 1
                   2294
                              429
                                                           L EQUIV PIN COND FOR 2.17
L EQUIV PIN COND FOR 2.17
                                     .000296
.000197
                                                                                                                n
                             529
                   2295
p 1101 1
                                    .000197 L EQUIV PIN COND FOR 2.17
.000296 L EQUIV PIN COND FOR 2.18
.000197 L EQUIV PIN COND FOR 2.18
.000296 L EQUIV PIN COND FOR 2.18
.000296 L EQUIV PIN COND FOR 2.18
.000296 L EQUIV PIN COND FOR 2.18
.000197 L EQUIV PIN COND FOR 2.18
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.000296 L EQUIV PIN COND FOR 4.00
.000197 L EQUIV PIN COND FOR 4.00
.000197 L EQUIV PIN COND FOR 4.00
.000197 L EQUIV PIN COND FOR 4.00
.000296 L EQUIV PIN COND FOR 4.00
.000197 L EQUIV PIN COND FOR 5.01
.000197 L EQUIV PIN COND FOR 5.01
                   2296
                             629
n 1102 1
                             130
n 1103 1
                   2301
p 1104 1
                   2302
                              230
                            330
n 1105 1
                  2303
                   2304
                             430
n 1106 1
                                                                                                                ь
                            530
p 1107 1
                   2305
p 1108 1
                  2306 630
                                                                                                                1101
n 1109 1
                   3011
p 1110 1
                    3012
                             1201
                            1301
                   3013
p 1111 1
                  3014
                            1401
r 1112 1
                            1501
                   3015
n 1113 1
                    3016
                             1601
p 1114 1
n 1115 1
                    3021
                              1102
                             1202
n 1116 1
                    3022
CTRL-F11mport ITAS_NC ALT-F3AutoMLI UDC Allowed PgDn PgUp Home SHFT-F11mport Column Shift-F3AutoCHT Shift-F5Del/Pur End
       FlSave/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
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èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                            Cond. Value L/R Description
m SqNo FACTOR From
                      To
                                            L EQUIV PIN COND FOR 5.01
                             .000296
              3023
                      1302
p 1117 1
                                            L EQUIV PIN COND FOR 5.01
                             .000197
                      1402
              3024
n 1118 1
                                            L EQUIV PIN COND FOR 5.01
                             .000296
                      1502
n 1119 1
              3025
                                            L EQUIV PIN COND FOR 5.01
                             .000197
                      1602
                                            L EQUIV PIN COND FOR 5.02
L EQUIV PIN COND FOR 5.02
              3026
n 1120 1
                            .000296
                      1103
              3031
n 1121 1
                            .000197
              3032
                      1203
p 1122 1
                            .000197
                                           L EQUIV PIN COND FOR 5.02
                      1303
              3033
                                           L EQUIV PIN COND FOR 5.02
L EQUIV PIN COND FOR 5.02
n 1123 1
                      1403
              3034
n 1124 1
                     1503 .000296
1603 .000197
1104 .000296
1204 .000197
              3035
n 1125 1
                                           L EQUIV PIN COND FOR 5.02
              3036
n 1126 1
                                           L EQUIV PIN COND FOR 5.03
              3041
                                           L EQUIV PIN COND FOR 5.03
L EQUIV PIN COND FOR 5.03
p 1127 1
n 1128 1
              3042
                           .000197
.000296
.000197
.000296
.000197
.000296
                      1304
              3043
 1129 1
                                           L EQUIV PIN COND FOR 5.03
                      1404
              3044
m 1130 1
                                           L EQUIV PIN COND FOR 5.03
                      1504
               3045
                                           L EQUIV PIN COND FOR 5.03
L EQUIV PIN COND FOR 5.04
n 1131 1
                      1604
               3046
m 1132 1
                      1105
               3051
m 1133 1
                                               EQUIV PIN COND FOR 5.04
                                           L
aeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
                                                                      PgDn PgUp Home
                          ALT-F3AutoMLI
                                         UDC Allowed
CTRL-Flimport ITAS NC
                                                                            End
                                          Shift-F5Del/Pur
                        Shift-F3AutoCHT
                       F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
SHFT-FlImport Column
     F1Save/Purge
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                             Cond. Value L/R Description
m SqNo FACTOR From
                      To
                                            L EQUIV PIN COND FOR 5.04
                      1305
                              .000296
□ 1135 l
               3053
                                            L EQUIV PIN COND FOR 5.04
                      1405
                              .000197
               3054
n 1136 1
                                            L EQUIV PIN COND FOR 5.04
                              .000296
               3055
                      1505
                                           L EQUIV PIN COND FOR 5.04
L EQUIV PIN COND FOR 5.05
L EQUIV PIN COND FOR 5.05

□ 1137 1

                              .000197
                      1605
               3056
p 1138 1
                             .000296
               3061
                      1106
  1139 1
                      1206
               3062
□ 1140 l
                                           L EQUIV PIN COND FOR 5.05
                              .000296
                      1306
               3063
                                           L EQUIV PIN COND FOR 5.05
L EQUIV PIN COND FOR 5.05
n 1141 1
                              .000197
                      1406
               3064
n 1142 1
                             .000296
               3065
                      1506
n 1143 1
                                            L EQUIV PIN COND FOR 5.05
                      1606
               3066
n 1144 1
                                           L EQUIV PIN COND FOR 6.03
                              .000296
               3091
                      1109
n 1145 1
                                           L EQUIV PIN COND FOR 6.03
L EQUIV PIN COND FOR 6.03
                             .000197
.000296
.000197
                      1209
               3092
n 1146 1
                      1309
               3093
n 1147 1
                                           L EQUIV PIN COND FOR 6.03
                       1409
               3094
 n 1148 1
                                           L EQUIV PIN COND FOR 6.03
                              .000296
                      1509
               3095
 p 1149 1
                                            L EQUIV PIN COND FOR 6.03
                              .000197
.000296
.000197
                       1609
               3096
 p 1150 1
                                             L EQUIV PIN COND FOR 6.04
                       1110
 m 1151 1
               3101
                                             L EQUIV PIN COND FOR 6.04
 1210
                                                                     PgDn PgUp Home
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed
                                            Shift-F5Del/Pur
Shift-F3AutoCHT Sniit-F5Del/Fd1
F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
                        Shift-F3AutoCHT
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éëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor pata Entry ëëëëëëëëëëëëëë ESC:Quit £
                      To Cond. Value L/R Description 1310 .000296 L EQUIV PIN CO
■ SqNo FACTOR From
                                               L EQUIV PIN COND FOR 6.04
p 1153 1
                3103
                      1410 .000197
                3104
                                                L EQUIV PIN COND FOR 6.04
n 1154 1
                                              L EQUIV PIN COND FOR 6.04
L EQUIV PIN COND FOR 6.04
L EQUIV PIN COND FOR 6.05
                      1510 .000296
1610 .000197
m 1155 1
                3105
                      1610 .000197
1111 .000296
1211 .000197
1311 .000296
1411 .000197
1511 .000296
1611 .000197
1112 .000296
1212 .000197
1312 .000296
1412 .000197
1512 .000296
1412 .000197
1514 .000296
1612 .000197
1114 .000296
1214 .000197
n 1156 1
                3106
n 1157 1
                3111
                                              L EQUIV PIN COND FOR 6.05
L EQUIV PIN COND FOR 6.05
L EQUIV PIN COND FOR 6.05
                3112
n 1158 1
m 1159 1
                3113
n 1160 1
                3114
                                                                                          p 1161 1
                3115
                                              L EQUIV PIN COND FOR 6.05
                                              L EQUIV PIN COND FOR 6.05
L EQUIV PIN COND FOR 6.06
L EQUIV PIN COND FOR 6.06
                3116
n 1162 1
m 1163 1
                3121
                                                                                          В
n 1164 1
                3122
                                                                                          L EQUIV PIN COND FOR 6.06
m 1165 1
                3123
                                              L EQUIV PIN COND FOR 6.06
L EQUIV PIN COND FOR 6.06
p 1166 1
                3124
n 1167 1
                3125
                                              L EQUIV PIN COND FOR 6.06
n 1168 1
                3126
                                              L EQUIV PIN COND FOR 7.01
L EQUIV PIN COND FOR 7.01
n 1169 1
                3141
n 1170 1
                3142
CTRL-FlImport ITAS_NC ALT-F3AutoMLI UDC Allowed PgDn PgUp Home
SHFT-F1Import Column Shift-F3AutoCHT
                                              Shift-F5Del/Pur
                                                                                 End
     F1Save/Purge
                        F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
eëë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëë ESC:Quit £
□ SqNo FACTOR From
                               Cond. Value L/R Description
                      To
             L EQUIV PIN COND FOR 7.01
p 1171 1 3143
                      1314 .000197
                                                                                          m
n 1172 1
m 1173 1
                                                                                          n
n 1174 1
D 1175 1
□ 1176 1
n 1177 1
                                                                                          n 1178 1
                                                                                          D
n 1179 1
p 1180 1
p 1181 1
E 1182 1
□ 1183 1
n 1184 1
                                                                                          p 1185 1
p 1186 1
p 1187 1
p 1188 1
PgDn PgUp Home
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur End F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F1OSearch
```

```
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëëë ESC:Quit £
                          Cond. Value L/R Description
m SqNo FACTOR From
                   TO
                                       L EQUIV PIN COND FOR 8.00
                          .000296
                   1317
            3173
n 1189 1
                                          EQUIV PIN COND FOR 8.00
                   1417
                          .000197
             3174
m 1190 1
                                          EQUIV PIN COND FOR 8.00
                          .000296
                   1517
             3175
n 1191 1
                                          EQUIV PIN COND FOR 8.00
                          .000197
             3176
                   1617
p 1192 1
                                       L PIN COND
                    2012
                          .1465
             2011
m 1193 1
                                       L PIN COND
                   2013
                          .1465
             2012
n 1194 1
                                         PIN COND
                          .1465
             2013
                   2014
m 1195 1
                                       L PIN COND
                          .1465
             2014
                   2015
n 1196 1
                                       L PIN COND
                          .1465
             2015
                   2016
n 1197 1
                                          PIN COND
                          .1465
                                       L
             2021
                    2022
n 1198 1
                                          PIN COND
                         .1465
                   2023
             2022
p 1199 1
                                       L PIN COND
                    2024
                          .1465
             2023
p 1200 l
                          .1465
                                       L PIN COND
                    2025
p 1201 1
             2024
                                         PIN COND
                          .1465
                                       T.
                    2026
             2025
n 1202 1
                                                                          п
                          .1465
                                          PIN COND
                    2032
             2031
n 1203 1
                                       L PIN COND
                    2033
                          .1465
             2032
p 1204 1
                                         PIN COND
                          .1465
                    2034
             2033
p 1205 1
                                          PIN COND
                                       T.
2034
                    2035
                           .1465
                                                              PgDn PgUp Home
                       ALT-F3AutoMLI
                                      UDC Allowed
CTRL-Flimport ITAS_NC
                                                                    End
                                      Shift-F5Del/Pur
SHFT-FlImport Column
                     Shift-F3AutoCHT
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
eëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëëëë ESC:Quit £
                          Cond. Value L/R Description
m SqNo FACTOR From
                    TO
                                                                           L PIN COND
                    2036
                          .1465
             2035
n 1207 1
                                          PIN COND
                          .1465
                    2042
p 1208 1
             2041
                                                                           Б
                          .1465
                                        L
                                          PIN COND
             2042
                    2043
n 1209 1
                                       L PIN COND
                          .1465
                    2044
             2043
n 1210 1
                                        L PIN COND
                          .1465
             2044
                    2045
n 1211 1
                                          PIN COND
                          .1465
                    2046
             2045
n 1212 1
                                       L PIN COND
                    2052
                          .1465
p 1213 1
             2051
                                                                           L PIN COND
                          .1465
             2052
                    2053
n 1214 1
                                       L PIN COND
                          .1465
                    2054
n 1215 1
             2053
                         .1465
                                          PIN COND
             2054
                    2055
n 1216 1
                                                                           p
                                       L PIN COND
                          .1465
                    2056
             2055
n 1217 1
                                                                           L PIN COND
                          .1465
             2061
                    2062
n 1218 1
                                         PIN COND
                          .1465
                                       T.
                    2063
             2062
n 1219 1
                          .1465
                                          PIN COND
n 1220 1
             2063
                    2064
                                          PIN COND
                          .1465
             2064
                    2065
□ 1221 1
                           .1465
                                          PIN COND
                    2066
n 1222
             2065
                                          PIN COND
                          .1465
             2071
                    2072
n 1223 1
                                          PIN COND
                           .1465
                    2073
PgDn PgUp Home
                                       UDC Allowed
CTRL-F1Import ITAS_NC ALT-F3AutoMLI
SHFT-F1Import Column Shift-F3AutoCHT
                                       Shift-F5Del/Pur
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
```

```
éëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëëë ESC:Quit f
□ SqNo FACTOR From
                         Cond. Value L/R Description
                                                                         п
                   To
                   2074
                          .1465
                                      L PIN COND
n 1225 1
             2073
p 1226 1
             2074
                   2075
                          .1465
                                         PIN COND
                                                                         -
                          .1465
n 1227 1
             2075
                   2076
                                         PIN COND
                                                                         p 1228 1
             2081
                   2082
                          .1465
                                      L
                                         PIN COND
                                                                         D
                          .1465
p 1229 1
             2082
                   2083
                                      L PIN COND
                                      L PIN COND
n 1230 1
             2083
                   2084
                          .1465
                                                                         n
                   2085
                                      L PIN COND
p 1231 1
             2084
                          .1465
                                                                         п
                          .1465
             2085
                   2086
                                      L PIN COND
                                                                         Б
p 1232 1
             2091
                   2092
                         .1465
                                      L PIN COND
                                                                         р
p 1233 1
                                      L PIN COND
L PIN COND
                         .1465
                   2093
                                                                         Þ
             2092
n 1234 1
             2093
                   2094
                                                                         n
n 1235 1
                   2095
                         .1465
n 1236 1
                                      L PIN COND
             2094
                                                                         D
                                     L PIN COND
n 1237 1
             2095
                  2096 .1465
                                                                         n
                         .1465
                                     L PIN COND
L PIN COND
             2101
                   2102
                                                                         p 1238 1
n 1239 1
             2102
                   2103
                                                                         п
                          .1465
n 1240 1
             2103
                   2104
                                      L PIN COND
                         .1465
D 1241 1
             2104
                   2105
                                      L PIN COND
n 1242 1
             2105
                   2106
                          .1465
                                         PIN COND
CTRL-Filmport ITAS NC ALT-F3AutoMLI UDC Allowed
                                                             PgDn PgUp Home
SHFT-F1Import Column Shift-F3AutoCHT
                                     Shift-F5Del/Pur
                                                                  End
                 F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
eëë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëë ESC:Quit f
m SqNo FACTOR From
                   To
                         Cond. Value L/R Description
                                                                         п
p 1243 1
             2111
                   2112 .1465
                                      L PIN COND
n 1244 1
             2112
                   2113
                        .1465
                                       L PIN COND
                                                                         27
n 1245 1
             2113
                   2114
                          .1465
                                         PIN COND
                                                                         D
                                      L PIN COND
n 1246 1
             2114
                   2115
                          .1465
                                                                         n
n 1247 1
             2115
                  2116
                         .1465
                                      L PIN COND
                   2122 .1465
                                      L PIN COND
p 1248 1
             2121
                                                                         .1465
                                     L PIN COND
p 1249 1
             2122
                   2123
                                                                         2124
p 1250 1
             2123
                         .1465
                                                                         2125 .1465
p 1251 1
             2124
                                     L PIN COND
                  2126 .1465
                                     L PIN COND
n 1252 1
             2125
                                                                         n
n 1253 1
             2131
                         .1465
                                         PIN COND
                   2132
                                                                         n
                        .1465
                                     L PIN COND
p 1254 1
             2132
                   2133
                                                                         \overline{\mathbf{n}}
= 1255 1
             2133
                  2134 .1465
                                     L PIN COND
                   2135 .1465
2136 .1465
                                      L
L
p 1256 1
             2134
                                         PIN COND
                                                                         .1465
□ 1257 1
             2135
                                         PIN COND
                                                                         2142 .1465
□ 1258 1
             2141
                                      L PIN COND
                   2143 .1465
2144 .1465
r 1259 1
             2142
                                      L PIN COND
E 1260 1
             2143
                                         PIN COND
aeeeeeeeeeeeeeeeeeeeeeeeee
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                    PgDn PgUp Home
                                                                  End
    FlSave/Purge
                   F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F1OSearch
```

```
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                          Cond. Value L/R Description
m SqNo FACTOR From
                   To
                   2145
                          .1465
                                       L PIN COND
n 1261 1
            2144
                                          PTN COND
             2145
                   2146
                          .1465
n 1262 1
                          .1465
                                          PIN COND
             2151
                   2152
n 1263 1
                          .1465
                                          PIN COND
n 1264 1
             2152
                   2153
                                         PTN COND
             2153
                   2154
                          .1465
                                       Τ.
n 1265 1
                          .1465
            2154
                   2155
                                       L PIN COND
p 1266 1
                          .1465
                                          PIN COND
            2155
                   2156
m 1267 1
                                       I. PIN COND
            2161
                   2162
                          .1465
n 1268 1
                   2163
                          .1465
                                       L PIN COND
            2162
n 1269 1
                                         PIN COND
                          .1465
                                       L
            2163
                   2164
p 1270 1
                          .1465
                                       L
                                          PIN COND

□ 1271 1

            2164
                   2165
                                       L PIN COND
                          .1465
n 1272 1
             2165
                   2166
                          .1465
                                      L PIN COND
            2171
                   2172
n 1273 1
                                       T.
                                          PIN COND
                   2173
                          .1465
n 1274 1
            2172
p 1275 1
                                       L
                                          PIN COND
             2173
                   2174
                          .1465
                                       L PIN COND
n 1276 l
             2174
                   2175
                          .1465
                          .1465
                                       L PIN COND
             2175
                   2176
n 1277 1
                          .1465
                                          PIN COND
                   2182
m 1278 1
             2181
PgDn PgUp Home
                                    UDC Allowed
CTRL-F1Import ITAS_NC
                      ALT-F3AutoMLI
                                                                    End
                     Shift-F3AutoCHT
                                      Shift-F5Del/Pur
SHFT-Flimport Column
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
eëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                          Cond. Value L/R Description
m SqNo FACTOR From
                   To
                          .1465
                                      L PIN COND
                   2183
n 1279 1
            2182
                                          PIN COND
             2183
                   2184
                          .1465
m 1280 1
                          .1465
                                          PIN COND
                   2185
n 1281 1
            2184
                                         PIN COND
             2185
                   2186
                          .1465
n 1282 1
                                                                          п
                   2192
                          .1465
                                       L PIN COND
            2191
p 1283 1
                                         PIN COND
                                       L
p 1284 1
             2192
                   2193
                          .1465
                          .1465
                                          PIN COND
n 1285 l
             2193
                   2194
                   2195
                          .1465
                                      L PIN COND
= 1286 1
             2194
                          .1465
                   2196
                                         PIN COND
m 1287 1
             2195
                          .1465
                                          PIN COND
                   2202
p 1288 1
            2201
                          .1465
                                         PIN COND
p 1289 1
             2202
                   2203
                          .1465
                                       L PIN COND
                   2204
p 1290 1
            2203
                                          PIN COND
            2204
                   2205
                          .1465
E 1291 1
                                          PIN COND
n 1292 1
                   2206
                          .1465
             2205
                                          PIN COND
□ 1293 1
             2211
                   2212
                          .1465
                                       L
                   2213
                          .1465
                                          PIN COND
             2212
n 1294 1
                          .1465
                                          PIN COND
□ 1295 1
             2213
                   2214
                   2215
                                          PIN COND
n 1296 1
             2214
                          .1465
PgDn PgUp Home
CTRL-FlImport ITAS NC ALT-F3AutoMLI
                                    UDC Allowed
SHFT-FlImport Column
                                      Shift-F5Del/Pur
                                                                    End
                     Shift-F3AutoCHT
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

```
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit £
                    To
                          Cond. Value L/R Description
m SqNo FACTOR From
                                        L PIN COND
p 1297 1
             2215
                    2216
                          .1465
                                        L PIN COND
n 1298 1
             2221
                    2222
                          .1465
                                                                           n
                         .1465
                                        L PIN COND
L PIN COND
             2222
                    2223
n 1299 1
                          .1465
= 1300 1
             2223
                    2224
                                                                           n
                         .1465
                                       L PIN COND
                    2225
n 1301 1
             2224
                                      L PIN COND
p 1302 1
             2225
                    2226
                         .1465
                                                                           .1465
.1465
                                       L PIN COND
L PIN COND
             2231
                    2232
                                                                           n 1303 1
p 1304 1
             2232
                    2233
                                                                           п
p 1305 1
             2233
                    2234
                                      L PIN COND
                                      L PIN COND
                    2235 .1465
                                                                           n 1306 1
             2234
                         .1465
                                       L PIN COND
p 1307 1
             2235
                    2236
                                                                           n
                                       L PIN COND
                                                                           p 1308 1
             2241
                    2242
                                      L PIN COND
                    2243
                         .1465
                                                                           n 1309 1
             2242
                         .1465
                                      L PIN COND
L PIN COND
                    2244
n 1310 1
             2243
                         .1465
             2244
                    2245
p 1311 1
p 1312 1
             2245
                    2246
                                       L PIN COND
                         .1465
.1465
n 1313 1
             2251
                    2252
                                       L PIN COND
                                          PIN COND
p 1314 1
             2252
                    2253
                                        L
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed
                                                      PgDn PgUp Home
SHFT-F1Import Column Shift-F3AutoCHT
                                      Shift-F5Del/Pur
                                                                    End
                  F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
eeë Ctrl:Copyeeëeeeeeeee ITAS Conductor Data Entry eeeeeeeeeeee ESC:Quit £
m SqNo FACTOR From
                    To
                          Cond. Value L/R Description
                          .1465
                                      L PIN COND
n 1315 1 2253
                    2254
□ 1316 1
             2254
                    2255
                         .1465
                                        L PIN COND
                                                                           п
                         .1465
                                       L PIN COND
L PIN COND
p 1317 1
             2255
                    2256
n 1318 1
             2261
                    2262
                                                                           D
                         .1465
□ 1319 1
             2262
                    2263
                                       L PIN COND
                                      L PIN COND
L PIN COND
                         .1465
                                                                           п
□ 1320 1
             2263
                    2264
                         .1465
1321 1
             2264
                    2265
                                                                           L PIN COND
= 1322 1
             2265
                    2266
                                                                           7
                    2272
                         .1465
                                      L PIN COND
= 1323 1
             2271
                                      L PIN COND
L PIN COND
                    2273
p 1324 1
             2272
                         .1465
                                                                           .1465
p 1325
             2273
                    2274
                                                                           L PIN COND
n 1326 1
             2274
                    2275
             2275
                    2276
                         .1465
                                      L PIN COND
n 1327 1
                                       L PIN COND
L PIN COND
                         .1465
n 1328 1
             2281
                    2282
                                                                           r 1329 1
             2282
                    2283
                                                                           .1465
p 1330 1
                    2284
                                       L PIN COND
             2283
             2284
                         .1465
                                 L PIN COND
L PIN COND
□ 1331 1
                    2285
□ 1332 1
             2285
                    2286
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed PgDn PgUp Home SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur End F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëëëë ESC:Quit f
                           Cond. Value L/R Description
m SqNo FACTOR From
                    To
                                        L PIN COND
                          .1465
                    2292
             2291
n 1333 1
                                        L PIN COND
                           .1465
                    2293
             2292
n 1334 1
                                        L PIN COND
             2293
                    2294
                           .1465
m 1335 l
                                        L PIN COND
L PIN COND
                    2295
                          .1465
             2294
n 1336 l
                          .1465
                    2296
n 1337 l
             2295
                                       L PIN COND
             2301
                    2302
                          .1465
p 1338 1
                                        L PIN COND
L PIN COND
                          .1465
                    2303
             2302
n 1339 1
                                                                             n
                         .1465
             2303
                    2304
n 1340 1
                         .1465
                                       L PIN COND
                    2305
             2304
m 1341 1
                                       L PIN COND
             2305
                    2306
n 1342 l
                                       L PIN COND
L PIN COND
                    3012 .1465
             3011
n 1343 1
                    3013 .1465
3014 .1465
3015 .1465
             3012
p 1344 1
                                       L PIN COND
             3013
m 1345 1
                                       L PIN COND
             3014
m 1346 l
                                        L PIN COND
                         .1465
             3015
                    3016
n 1347 1
                          .1465
                                        L PIN COND
             3021
                    3022
□ 1348 1
                                        L PIN COND
                          .1465
             3022
                    3023
= 1349 1
                                           PIN COND
                            .1465
3023
                    3024
                                                                PgDn PgUp Home
                        ALT-F3AutoMLI UDC Allowed
CTRL-FlImport ITAS_NC
                                                                      End
                                        Shift-F5Del/Pur
                      Shift-F3AutoCHT
SHFT-Flimport Column
                   F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     F1Save/Purge
eëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëëë ESC:Quit £
                          Cond. Value L/R Description
m SqNo FACTOR From
                    To
                                                                             п
                                         L PIN COND
                          .1465
                    3025
             3024
m 1351 1
                                                                             L PIN COND
              3025
                    3026
                           .1465
n 1352 1
                                        L PIN COND
                          .1465
                    3032
             3031

□ 1353 1

                          .1465
             3032
                    3033
n 1354 l
                          .1465
                                        L PIN COND
                     3034
              3033
m 1355 l
                                        L PIN COND
                    3035
              3034
m 1356 1
                                        L PIN COND
L PIN COND
                         .1465
                    3036
              3035
p 1357 1
                         .1465
.1465
.1465
                    3042
              3041
n 1358 l
                                        L PIN COND
                     3043
              3042

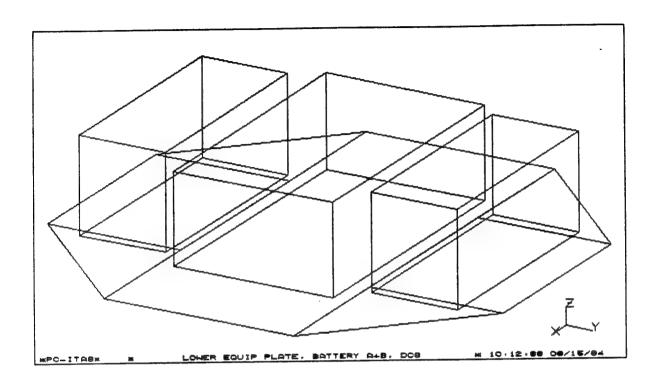
□ 1359 1

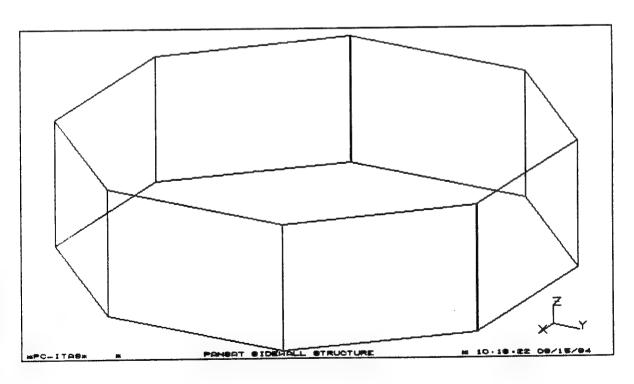
                                        L PIN COND
                    3044
m 1360 1
              3043
                                        L PIN COND
L PIN COND
                         .1465
                     3045
p 1361 1
              3044
                          .1465
                     3046
n 1362 1
              3045
                                        L PIN COND
                           .1465
              3051
                     3052
m 1363 1
                                        L PIN COND
L PIN COND
                          .1465
                     3053
n 1364 1
              3052
                          .1465
              3053
                     3054
                          .1465
p 1365 1
                                        L PIN COND
              3054
                     3055
n 1366 l
                                        L PIN COND
              3055
                     3056
p 1367 1
                                            PIN COND
                                         L
3061
                     3062
                                                                 PgDn PgUp Home
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                                       End
     F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

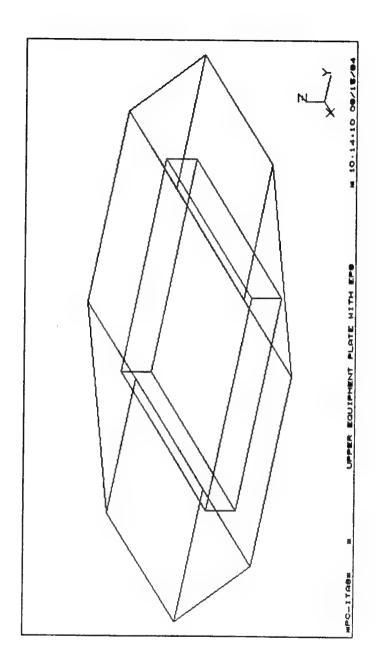
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eëë Ctrl:Copyeeëëeeeeee ITAS Conductor Data Entry eeeeeeeeeeeee ESC:Quit f
                           Cond. Value L/R Description
m SqNo FACTOR From
                                                                             To
                    3063
p 1369 1
             3062
                           .1465
                                         L PIN COND
                                                                             n
n 1370 1
                           .1465
                                         L PIN COND
             3063
                                                                             3064
                                        L PIN COND
L PIN COND
L PIN COND
                         .1465
p 1371 1
             3064
                    3065
                                                                             .1465
n 1372 1
             3065
                    3066
                                                                             p 1373 1
             3091
                    3092
                           .1465
                                                                             n
m 1374 1
             3092
                    3093 .1465
                                        L PIN COND
                    3094 .1465
3095 .1465
3096 .1465
3102 .1465
                                        L PIN COND
L PIN COND
p 1375 1
             3093
                                                                             m 1376 1
             3094
                                                                             n
                                        L PIN COND
n 1377 1
             3095
                                                                             L PIN COND
L PIN COND
L PIN COND
n 1378 1
             3101
                                                                             D
                    3103 .1465
3104 .1465
n 1379 1
             3102
                                                                             3104 .1465
3105 .1465
p 1380 1
             3103
                                                                             D
                                        L PIN COND
n 1381 1
             3104
                                                                             p 1382 1
             3105
                    3106 .1465
                                        L PIN COND
                                                                             n
                         .1465
                                        L PIN COND
L PIN COND
p 1383 1
             3111
                    3112
                                                                             п
                          .1465
p 1384 1
             3112
                    3113
                                                                             .1465
                                        L PIN COND
L PIN COND
p 1385 1
             3113
                    3114
n 1386 1
             3114
                    3115
                           .1465
aeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
CTRL-Flimport ITAS_NC ALT-F3AutoMLI UDC Allowed
                                                        PgDn PgUp Home
SHFT-FlImport Column Shift-F3AutoCHT
                                        Shift-F5Del/Pur
    F1Save/Purge
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
eëë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëë ESC:Quit f
D SQNO FACTOR From
                    To
                           Cond. Value L/R Description
                                                                             E 1387 1
             3115
                    3116
                           .1465
                                        L PIN COND
                                                                             L PIN COND
p 1388 1
             3121
                    3122
                          .1465
                                                                             .1465
                                        L PIN COND
L PIN COND
p 1389 1
             3122
                    3123
                                                                             o
                         .1465
p 1390 1
             3123
                    3124
                                                                             п
                         .1465
.1465
                                        L PIN COND
p 1391 1
             3124
                    3125
                                                                             D
p 1392 1
             3125
                    3126
                                        L PIN COND
                         .1465
                                        L PIN COND
L PIN COND
= 1393 1
             3141
                    3142
                                                                             3143 .1465
3144 .1465
p 1394 1
             3142
                                                                             п
p 1395 1
             3143
                                        L PIN COND
                                                                             p 1396 1
             3144
                    3145 .1465
                                        L PIN COND
                    3146 .1465
3152 .1465
3153 .1465
                                        L PIN COND
L PIN COND
p 1397 1
             3145
                                                                             b
            3151
p 1398 1
                                                                             p 1399 1
             3152
                                       L PIN COND
                                                                             n 1400 1
             3153
                    3154 .1465
                                       L PIN COND
                                                                             .1465
□ 1401 1
             3154
                    3155
                                        L PIN COND
                                                                             Þ
p 1402 1
             3155
                    3156
                           .1465
                                        L PIN COND
                                                                             .1465
r 1403 1
             3161
                    3162
                                       L PIN COND
p 1404 1
             3162
                    3163
                                           PIN COND
                           .1465
                                        L
CTRL-FlImport ITAS_NC ALT-F3AutoMLI UDC Allowed
                                                                PgDn PgUp Home
SHFT-FlImport Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                                      End
    F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
eëë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëëë ESC:Quit f
                    Cond. Value L/R Description
               To
n SqNo FACTOR From
                                                          L PIN COND
                    .1465
               3164
n 1405 1
          3163
                                                          D
                              L PIN COND
                    .1465
          3164
               3165
n 1406 l
                                 PIN COND
               3166
                    .1465
          3165
p 1407 1
                                                          PIN COND
                    .1465
m 1408 1
          3171
               3172
                                                          L PIN COND
                    .1465
          3172
               3173
n 1409 1
                               L PIN COND
                    .1465
               3174
          3173
n 1410 1
                                                          n
                                PIN COND
                    .1465
          3174
               3175
p 1411 1
                                                          L PIN COND
               3176
                    .1465
          3175
n 1412 1
п
                                                          D
D
                                                          D
n
n
                                                          D
                                                          \mathbf{p}
PgDn PgUp Home
```

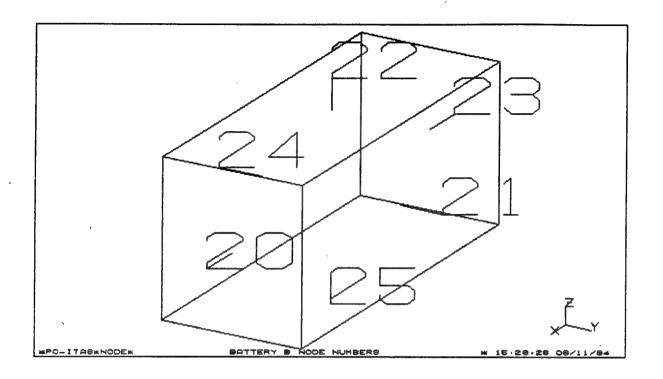
# APPENDIX N. ITAS BATTERY GEOMETRY MODEL

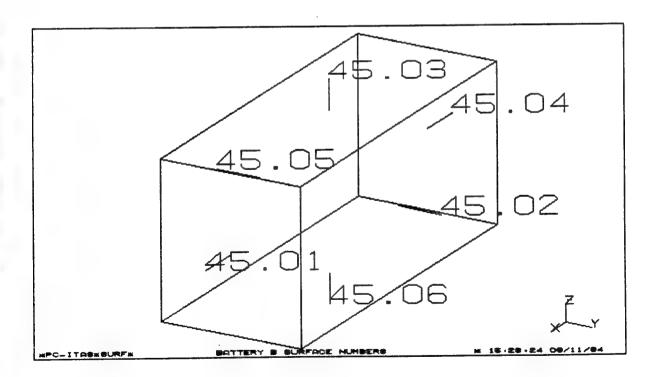






# APPENDIX O. BATTERY B SURFACE AND NODE NUMBERS





#### APPENDIX P. BATTERY OPTICAL PROPERTIES

```
PgDn PgUp Home End
Seg Surface No NodeNo Alpha Emiss T/Mass Dissip MID Comments
1 1.00 1 0.400 0.790 1. 0. 144 LOWER EQUIPMENT PL
                                 0.400 0.790 1. 0.
0.400 0.790 1. 0.
      1 1.00
                                0.400
                                                                     144 LOWER EQUIPMENT PL
144 LOWER EQUIPMENT PL
144 LOWER EQUIPMENT PL
144 LOWER EQUIPMENT PL
144 UPPER EQUIPMENT PL
144 LOWER EQUIPMENT PL
144 LOWER EQUIPMENT PL
144 BATTERY A
144 BATTERY A
      2 5.00
   3 10.00
                                0.400 0.790 1.
                                                            0.
                       3
77
                                0.400 0.790 1.
0.400 0.790 1.
0.400 0.790 1.
                                                             0.
                                                             0.
                                                            0.
                                0.400 0.790 1.
                                                           0.
                                                             0.
                                0.400 0.790 1.
0.400 0.790 1.
0.400 0.790 1.
                                                                     144 BATTERY A
144 BATTERY A
144 BATTERY A
                                                            0.
                               0.400 0.790 1. 0.

0.400 0.790 1. 0.

0.400 0.790 1. 0.

0.400 0.790 1. 0.

0.400 0.790 1. 0.

0.400 0.790 1. 0.
                                                           0.
                                                                      144 BATTERY A
                                                                      144 DCS
                                                                       144
                                                                              DCS
D
                                                                              DCS
                                                                       144
                            0.400 0.790 1.
0.400 0.790 1.
                                                                             DCS
                                                              0.
                                                                        144
                                                                              DCS
                                                              Ω.
                                                                        144
n 18 40.05
                      18
S-F4Auto TM UDC Allowed
 S-F1Load/Save All
    Fiload/Save Page F3PropLib F4AutoGen F5ImportPropFmt F6NewPropFile F10Search
PqDn PqUp Home End
eeë Ctrl : Copy (See F2)ëë ITAS Property Data Entry ëëëëëëëëëëëëëëëëëëëëëëëëëëëëë
144 BATTERY B
144 BATTERY B
144 BATTERY B
                                 0.400 0.790 1.
                                                              0.
    20 45.01
                       20
    21 45.02
                                0.400 0.790 1.
0.400 0.790 1.
0.400 0.790 1.
                                                             0.
                     21
22
23
                                                             0.
    22 45.03
    23 45.04
                                                                      144 BATTERY B
                                                            0.
   23 45.04 23

24 45.05 24

25 45.06 25

26 51.00 26

27 55.00 27

28 60.00 28

29 65.00 29

30 70.00 30

31 75.00 31

32 80.00 32

33 82.00 33
                                                                     144 BATTERY B
144 BATTERY B
144 UPPER EQUIPMENT PL
                                                            0.
                               0.400 0.790 1.
                                0.400 0.790 1.
0.400 0.790 1.
                                                             0.
0.400 0.790 1. 0. 144 UPPER EQUIPMENT PL
0.400 0.790 1. 0. 144 STRUCTURE FRONT MI
0.400 0.790 1. 0. 144 STRUCTURE BACK MID
п
   31 75.00
n 32 80.00
n 33 82.00
n 34 84.00
                                                              0.
                                0.400 0.790 1.
                                                                       144 STRUCTURE BACK MID
                      34
                                                              0. 144 STRUCTURE RIGHT
0. 144 STRUCTURE LEFT
п 35 86.00 35 0.400 0.790 1.
п 36 88.00 36 0.400 0.790 1.
S-F1Load/Save All S-F4Auto TM UDC Allowed
    F1Load/Save Page F3PropLib F4AutoGen F5ImportPropFmt F6NewPropFile F10Search
```

									70.11-1-	
P	gDn 1	PgUp Home	End					** ** ** **	F2Help	_
è	ëë Ci	trl : Copy	(See F2	)ëë ITA	S Prope	rty Data	a Entry	eeee	<b>eeeeeee</b> eeeeeeeee	L
	Seq	Surface N	lo NodeNo	Alpha	<b>E</b> miss	T/Mass	Dissip	MID	Comments	n
p			29	0.400	0.790	1.	0.	144	UPPER EQUIPMENT PL	
-	30	70.00	30	0.400	0.790	1.	0.	144	UPPER EQUIPMENT PL	
<b>D</b>	31	75.00	31	0.400	0.790	1.	0.	144	UPPER EQUIPMENT PL	D
_		80.00	32	0.400	0.790	1.	0.	144	UPPER EQUIPMENT PL	
_		82.00	33	0.400	0.790	1.	0.	144	STRUCTURE FRONT MI	D
_			34	0.400	0.790	1.	0.	144	STRUCTURE BACK MID	
_ n		86.00	35	0.400	0.790	1.	0.	144	STRUCTURE RIGHT	
_		88.00	36	0.400	0.790	1.	0.	144	STRUCTURE LEFT	D
_ _		92.00	37	0.400	0.790	1.	0.	144	RIGHT FRONT SLANT:	n
		94.00	38	0.400	0.790	ī.	0.	144	RIGHT FRONT SLANT	
_			39	0.400	0.790	i.	0.	144	BACK RIGHT SLANT	
		98.00	40	0.400	0.790	ī.	0.	144	RIGHT BACK SLANT	D
		99.01	41	0.400	0.790	ī.	0.	144	EPS	D
_		99.02	42	0.400	0.790	1.	0.	144	EPS	D
<u>n</u>		99.02	43	0.400	0.790	1.	o.	144	EPS	D
_				0.400	0.790	1.	0.	144	EPS	D
		99.04	44		0.790	1.	0.	144	EPS	<u> </u>
D		99.05	45	0.400			0.	144	EPS	
Þ	46	99.06	46	0.400	0.790	1.	U. *******		e e e e e e e e e e e e e e e e e e e	_
							DC Allo	ಂದೆ	ESCOuit	
	S-F1	Load/Save	ATT	S-	F4Auto	TM U	OC WIIO	NEU		•h
	Fl	Load/Save	Page F3P	cobrip	r4AutoG	en reim	portrroj	Print.	reweartobilite biosegic	. 4.4
	S-F1: F1:	Load/Save Load/Save	Page F3P:	ropLib	F4Auto F4AutoG	en F5Im	portPro	pFmt	F6NewPropFile F10Searc	:h

# APPENDIX Q. PANSAT TRANSIENT STRUCTURAL ANALYSIS

									Page	No.14
PAN	SAT - TR	ANSIE	NT - SUN	LIGHT	ZONE -	INTERN	VAL HEAT	DISS	IPATION -	PASS
Temp	eratures	, deq	С							
1	32.40	2	33.67	3	35.07	4	32.09	5	33.59	6
7	32.47	8	33.54	9	34.69	10	39.58	11		.2
13	39.76	14	41.05	15	41.37	16	37.92	17		.8
19	39.37	20	38.62	21	37.18	22	40.80	23		24
25	39.06	26	38.54	27	37.08	28	32.28	29		30
31	32.08	32	30.41	33	30.00	34	31.71	35		36
37	30.37	38	30.57	39	31.03		30.01	41		12 18
43	30.86	44	31.25	45	31.81	4.6	32.11	47		54
49	33.21	50	33.87	51	34.13		33.26	53		50
55	33.03	56	32.75	57	31.78		34.11	59		56
61	34.11	62	33.80	63	32.85		28.40	65		72
67	28.78	68	27.91	69	28.55		29.55	71		78
73	27.73	74	29.43	75	33.79		29.45	77		70 84
79	31.11	80	33.04	81	35.23		40.46	83		90
85	41.20	86	40.80	87	41.71		37.21	89		96
91		92	37.05	93	35.60		38.35			
97	30.16	98	29.48	99	30.39		29.48	101	31.61 10 25.48 10	02
103	26.29	104	24.59		24.93		26.60	107	26.73 1	1 /
109	28.50	110	27.98		28.44		26.73	113	25.88 1	30 T.4
115	28.95	116	29.86	117	30.52	118	26.73 26.24 29.65	119	29.14 1	26
121	27.85	122	27.19	123	26.76	124	29.65 25.64	123	26.63 1	
127	25.70	128	25.89		25.45		28.14	137	28.85 1	
133	29.72		30.52	135	32.04	130	35.42	143	36.06 1	
139	28.05	140	28.30		32.10	142	34.91	149		
145	37.12		41.06		41.32	140	34.69	155		
151	34.88		32.97	153	31.51 29.44		28.94	161	30.75 1	
157	29.53	158	28.94		31.62		29.16	167	29.75 1	68
163	30.26	164	30.91		31.52	172	32.18	173	32.52 1	
169	29.46	170	29.18	1/1		178	33.01	179	32.11 1	
175	33.63	176	36.91	1//		194	33.02	185	31.00 1	
181	33.09	182	31.86	183	28.73	190	28.23	191	30.26 1	
187	28.43		28.02		28.20		25.32	197	26.39 1	
193	25.04		25.51		31.35		29.36		27.91 2	
199	25.99		27.55		28.56		27.73		27.67 2	
205	28.22	206	27.24		34.63		33.51		32.24 2	
211	33.97		34.66		33.70		34.39		34.43 2	
217	31.45		31.15		33.44		33.39		32.78 2	
223	33.33		33.48		28.77	232	28.61			
229	30.58		30.52	231	20.11	- J - M				
301	-272.80							,		

PAI	NSAT - TF	RANSIENT	- SH	ADOW	ZONE -	IN	TERNAL.	неат	וופפות	מחדתמ	Pa
Temp	peratures	deqC						••••	210011	MITON	- P
1	29.93		30.8	8 3	3 31	. 83	4	29.3	32 5	30.	4.4
7	30.08		30.8			. 66		33.0			
13	33.67		34.7			.60		32.5		33.	
19	33.64		33.0			. 97		34.4		33. 33.	
25	33.96		33.0			. 99		29.6		28.	
31	29.66		28.4			. 27		29.5			
37	30.28		30.7			. 22		29.9		28.	
43	30.77		31.3			. 91		32.4		30.	
49	33.37		34.0			. 25		33.2		32.	
55	33.23		32.9			. 23 . 97		34.2		33.	
61	34.21		33.9					28.5		33.	
67	28.95		28.0					29.6		27.	
73	24.95		26.0				76			28.	
79	28.75		30.2					26.7		29.	
85	30.26		30.8				88	29.4		29.	
91	31.86		31.5				94	30.3		29.	
97	25.67		25.5				100	32.4		32.	
103	25.04			l. 105			106		3 101		88
109	27.92		28.1				112		5 107	25.	
115	29.25		30.62				112		8 113	26.	
121	27.98		27.30						9 119	25.	
127	24.68		24.63				124		8 125	29.	
133	28.85		29.98				130		3 131	26.	
139	27.11		26.83				136		7 137	27.	
145	29.18		27.85				142		5 143	30.	
151	29.86		29.29				148		6 149	30.	
157	27.54		27.46				154		3 155	28.	
163	30.13		31.00				160		0 161		93 1
169	28.68		29.32				166		2 167		84 1
175	32.24		36.36		31.		172		7 173		01 1
181			31.96				178		5 179	32.	
187	28.45		27.85		30.		184		2 185	31.	
193	23.23						190	27.9	6 191	30.	
199	23.42		22.92				196		7 197	23.	
205	28.20		23.94				202	29.3		27.	
211	32.31		26.93				208		9 209	27.6	
217			32.69				214		8 215	31.	74 2
223	31.56		31.32	219	32.				0 221	32.8	39 2
229	32.82		33.13		33.				1 227	32.2	
	30.60	230	30.64	231	28.	51	232	28.5	5		
301	-272.80		•								

#### APPENDIX R. ITAS BATTERY THERMAL MASSES

```
eëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëëEESC:Quitë£
                           ThrMass Dissip
                                             Comment
                  Temp-C
m SEON
         NodeNo
                                             LOWER EQUIPMENT PLATE
                  33.74
                           19.438
         -101
D
    1
                                            LOWER EQUIPMENT PLATE
                           5.692
                                    n
                                            LOWER EQUIPMENT PLATE
                  33.74
         -102
                           5.692
                                    0
         -103
                  33.74
                                            LOWER EQUIPMENT PLATE LOWER EQUIPMENT PLATE
     3
                                  0000000
33.74
                           2.014
         -104
4
                  33.74
                           2.014
                                           LOWER EQUIPMENT PLATE
LOWER EQUIPMENT PLATE
BATTERY A
         -105
                  33.74
                           2.014
         -106
2.014
                  33.74
7
         -107
                           2.169
                  30
         201
     8
BATTERY A
                  30
                           5.327
         202
                                            BATTERY A
                           3.3
    10
         203
                  30
77
                                           BATTERY A
BATTERY A
                                   0
                           2.169
                 30
n
    11
         204
                           5.327
                                    0
         205
                  30
    12
0
                                            BATTERY A
         206
                           3.3
                  30
D
    13
                          3.805
                                     0
                                             DCS
14
         301
                  30
                                             DCS
                           6.342
                                    0
         302
                  30
   15
п
                                             DCS
                           7.610
                                    0
                  30
         303
   16
                                              DCS
                           3.805
                                   0
    17
         304
                  30
10
                                              DCS
                                     0
                           6.342
aeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
                  30
                                                          PgDn PgUp Home End
CTRL-F1Import ITAS_NC UDC Allowed
                                          Shift-F5Del/Pur
SHFT-FlImport Column
                      F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
èëCtrl:Copyëëëëëëë ITAS Node Data Entry For Thermal Analysis ëëëëëëëëëESC:Quitë£
                           ThrMass Dissip Comment
                  Temp-C
         NodeNo
                                              DCS
                                     0
         306
                  30
                           7.610
    19
BATTERY B
                           2.169
                                     0
                  30
         401
D
    20
                                    0
                                              BATTERY B
         402
                           5.327
E
    21
                                                                                 \mathbf{p}
                                             BATTERY B
                           3.3
                  3.0
         403
                                                                                 D
                                     0
                                            BATTERY B
                           2.169
                  30
    23
         404
5.327 0
                                            BATTERY B
BATTERY B
                  30
         405
                           3.3
                                     0
                                           UPPER EQUIPMENT PLATE
UPPER EQUIPMENT PLATE
UPPER EQUIPMENT PLATE
UPPER EQUIPMENT PLATE
UPPER EQUIPMENT PLATE
UPPER EQUIPMENT PLATE
UPPER EQUIPMENT PLATE
         406
                  30
                                   Ö
                           9.719
         -501
                  33.08
    26
                          1.068 0
1.068 0
1.068 0
1.068 0
                  33.08
                         2.846 0
    27
         -502
                         2.846
                  33.08
    28
         -503
33.08
         -504
    29
                 33.08
                                                                                 -505
    30
D
                          1.068 0
1.068 0
2.014 0
2.014 0
                 33.08
         -506
    31
33.08
    32
         -507
PANSAT STRUCTURE
                  33.44
         -601
33
                                             PANSAT STRUCTURE
                                                                                 2
         -602
                  39.87
     34
2.014 0
2.014 0
                                              PANSAT STRUCTURE
    35
         -603
                  38.83
PANSAT STRUCTURE
                   31.14
36
         -604
                                                          PgDn PgUp Home End
CTRL-FlImport ITAS_NC UDC Allowed
                                          Shift-F5Del/Pur
SHFT-FlImport Column
                   F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     F1Save/Purge
```

èè	Ctrl:C	opyëëëëëë	ë ITAS No	de Data E	ntry For	Thermal Analysis ëëëëëëëESC:Quitë£	
				_,			
	SEQN	NodeNo	Temp-C	ThrMass	Dissip	Comment	
	37	-605	30.79	2.014	0	PANSAT STRUCTURE	
n	38	-606	33.26	2.014	0	PANSAT STRUCTURE	
	39	-607	33.26	2.014	0	PANSAT STRUCTURE	
D	40	-608	28.56	2.014	0	PANSAT STRUCTURE n	
	41	701	30	1.598	0	EPS	
Þ	42	702	30	1.788	0	EPS	
п	43	703	30	9.132	0	EPS	
Д	44	704	30	1.598	D	EPS	
E	45	705	30	1.788	0	EPS	
n	46	706	30	9.132	0	EPS	
В	47	1500	30	0	1	HEAT DISSIPATION IN BATTERY A	
	48	1600	30	0	6.25	HEAT DISSIPATION IN DCS	
	49	1700	30	0	.5	HEAT DISSIPATION IN BATTERY B	
D	50	1800	30	0	. 5	HEAT DISSIPATION IN EPS	
D	-					n	
п						a	
п							
- B						n	
Àë	***	******	4444444	888888888	******	÷ <mark>eeëëëëëëëëëëëëëëëëëë</mark> ëëëëëëëëëëëëëëëëë	
		mport ITA		C Allowed		PgDn PgUp Home End	
		mport Col	-	C MIIOWCG	Shi	ft-F5Del/Pur	
υı.		ave/Purge		lp F3Auto		ge F5Delete F7Mark/UnMark F10Search	

# APPENDIX S. BATTERY THERMAL MASS CALCULATIONS

			BATTERY	THERMAL	CAPACITA	NCES	: 4	i
	1							
		thickness	volume	ro-Al	c-Al		<del></del>	thr mass
101			30.65		0.199	69.78		19.4379
102		1	8.975	2787		69.78		5.69186
103	35.9	0.25	8.975	2787	0.199	69.78		5.69186
104	12.7	0.25	3.175	2787	0.199	69.78		
105	12.7	0.25	3.175	2787	0.199	69.78	61024	2.01355
106	12.7	0.25	3.175	2787	0.199	69.78	61024	2.01355
107	12.7	0.25	3.175	2787	0.199	69.78	61024	2.01355
201	17.1	0.2	3.42	2787	0.199	69.78	61024	2.16893
202	42	0.2	8.4	2787	0.199	69.78	61024	5.32720
203	26	0.2	5.2	2787	0.199	69.78	61024	3.29779
204	17.1	0.2	3.42	2787	0.199	69.78	61024	2.16893
205	42	0.2	8.4	2787	0.199	69.78	61024	5.32720
206	26	0.2	5.2	2787	0.199	69.78	61024	3.29779
301	30	0.2	6	2787	0.199	69.78	61024	3.80514
302	50	0.2	10	2787	0.199	69.78	61024	6.34191
303	60	0.2	12	2787	0.199	69.78	61024	7.61029
304	30	0.2	6	2787	0.199	69.78	61024	3.80514
<b>3</b> 05	50	0.2	10	2787	0.199	69.78	61024	6.34191
306	60	0.2	12	2787	0.199	69.78	61024	7.61029
401	17.1	0.2	3.42	2787	0.199	69.78	61024	2.16893
402	42	0.2	8.4	2787	0.199	69.78	61024	5.32720
403	26	0.2	5.2	2787	0.199	69.78	61024	3.29779
404	17.1	0.2	3.42	2787	0.199	69.78	61024	2.16893
405	42	0.2	8.4	2787	0.199	69.78	61024	5.32720
406	26	0.2	5.2	2787	0.199	69.78	61024	3.29779
501	122.6	0.125	15.325	2787	0.199	69.78	61024	9.71898
502	35.9	0.125	4.4875	2787	0.199	69.78	61024	2.84593
503	35.9	0.125	4.4875	2787	0.199	69.78	61024	2.84593
504	12.7	0.125	1.5875	2787	0.199	69.78	61024	1.00677
505	12.7		1.5875	2787	0.199	69.78	61024	1.00677
506	12.7		1.5875	2787	0.199	69.78	61024	1.00677
507	12.7		1.5875	2787	0.199	69.78	61024	
601	50.8	0.0625	3.175	2787	0.199	69.78	61024	2.01355
602	50.8	0.0625	3.175	2787	0.199	69.78	61024	2.01355

9.132356	61024	82.69	0.199	2787	14.4	0.5		206
1.78842	61024	69.78	0.199	2787	2.82	0.2	14.1	705
1.598162	61024	69.78	0.199	2787	2.52	0.2		704
9.132356	61024	82.69	0.199	2787	14.4	0.2	:	703
1.78842	61024	82.69	0.199	2787	2.82	0.2	:	702
1.598162	61024	82.69	0.199	2787	2.52	0.2	:	701
2.013558	61024	69.78	0.199	2787	3.175	0.0625		809
2.013558	61024	82.69	0.199	2787	3.175	0.0625		209
2.013558	61024	69.78	0.199	2787	3.175	0.0625	4	909
2.013558	61024	69.78	0.199	2787	3.175	0.0625	i	605
2.013558	61024	82.69	0.199	2787	3.175	0.0625	!	604
2.013558	61024	82.69	0.199	2787	3.175	0.0625	i	603

### APPENDIX T. BATTERY CONDUCTANCE CALCULATIONS

				BATTERY	CONDUCT	TANCES		
	•							
-			width	th	area	length	k (Al)	conductance
rom	To	202	5.25	0.2			4.31	0.804533333
	201	205	5.25	0.2		1	4.31	0.804533333
	201	203	3.25	0.2	1			0.422867925
	201	206	3.25	-				0.422867925
	201	204	3.25					0.422867925
	202	203	3.23					1.622588235
	202	203	8					1.622588235
	202	205						1.622588235
	203		3.25					0.422867925
	203	204						0.422867925
	204	205						0.49804444
	204							1.622588235
	205	206				. 8		0.53875
	301	302				i. 8		0.5387
	301	305						0.6896
	301	303						0.689
	301	306				1 8		
	302	304				2 5.5		1.56727272
	302	303			<u> </u>	2 5.5		
	302	306				2 5.5		
	303	305						
	303	304						
	304	306		5; 0.2 5; 0.2			8 4.31	
	304	305				2 5.		
	305	306						
	401	402						
	401	405	1					
	401	403	<del></del>					
	401	406						
	402	404						
	402	403						
	402	400		8 0.		- 1		
	403	40	5,	8 0.	۷ .	0 4.2	3 4.0	

2	404	3.25	0.5	0.65	6.625	4.31	0.422867925
404	406	3.25	0.2	0.65	6.625	4.31	0.422867925
404	405	5.25	0.5	1.05	5.625	4.31	0.804533333
405	406	80	0.2	1.6	4.25	4.31	1.622588235
1500	201			17.1	0.2	4.31	368.505
1500	202			42	0.2	4.31	905.1
1500	203			26	0.2	4.31	560.3
1500	204			17.1	0.2	4.31	368.505
1500	205			42	0.2	4.31	905.1
1500	506			56	0.2	4.31	560.3
1600	301			30	0.2	4.31	646.5
1600	302			20	0.2	4.31	1077.5
1600	303			09	0.2	4.31	1293
1600	304			30	0.2	4.31	646.5
1600	305			20	0.2	4.31	1077.5
1600	306			09	0.2	4.31	1293
1700	401		and the same of th	17.1	0.2	4.31	368.505
1700	402			42	0.2	4.31	905.1
1700	403			56	0.2	4.31	560.3
1700	404			17.1	0.2	4.31	368.505
1700	405			42	0.2	4.31	905.1
1700	406			26	0.2	4.31	560.3
506	102	3.25	7.13	23.1725	0.225	4.31	443.8821111
206	104	3.25	0.435	1.41375	0.225	4.31	27.08116667
206	105	3.25	0.435	1.41375	0.225	4.31	27.08116667
306	5	9	0	09	0.225	4.31	1149.333333
406	103	3.25	7.13	23.1725	0.225	4.31	443.8821111
406	106	3.25	0.435	1.41375	0.225	4.31	27.08116667
406	107	3.25	0.435	1.41375	0.225	4.31	27.08116667
703	201	7.13	7.13	50.8369	0.225	4.31	973.8090622
703	205	0.435	7.13	3.10155	0.225	4.31	59.41191333
703	503	0.435	7.13	3.10155	0.225	4.31	59.41191333
703	504	0.435	0.935	0.406725	0.225	4.31	7.791043333
703	505	0.435	0.935	0.406725	0.225	4.31	7.791043333
703	206	0.435	0.935	0.406725	0.225	4.31	7.791043333
703	507	0.435	0.935	0.406725	0.225	431	7 7010/3333

### APPENDIX U. BATTERY MODEL CONDUCTOR DATA ENTRY

```
eëë Ctrl:Copyeëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëë ESC:Quit f
SqNo FACTOR From
                     To
                            Cond. Value L/R Description
                                         L GEOMETRY TO LOWER PLATE NODE
                     101
                            1000
     1 1
                                          L GEOMETRY TO LOWER PLATE NODE
                            1000
     2 1
                     102
                                          L GEOMETRY TO LOWER PLATE NODE
              3
                     103
                            1000
D
                                          L GEOMETRY TO LOWER PLATE NODE
                     104
                            1000
      1
                                        L GEOMETRY TO LOWER PLATE NODE
     5 1
              5
                     105
                            1000
                                         L GEOMETRY TO LOWER PLATE NODE
                     106
                            1000
     6 1
              6
L GEOMETRY TO LOWER PLATE NODE
     7 1
                     107
                            1000
                            1000
             8
                     201
                                        L GEOMETRY TO BATTERY A NODE
     8 1
                           L GEOMETRY TO BATTERY A NODE
    9 1
             9
                     202
                                       L GEOMETRY TO BATTERY A NODE
L GEOMETRY TO BATTERY A NODE
L GEOMETRY TO BATTERY A NODE
D
    10 1
             10
                     203
    11 1
             11
                     204
                     205
    12 1
            12
                                        L GEOMETRY TO BATTERY A NODE
L GEOMETRY TO DCS NODE
L GEOMETRY TO DCS NODE
    13 1
            13
                     206
                     301
    14 1
             14
    15 1
             15
                     302
                                        L GEOMETRY TO DCS NODE
             16
                     303
    16 1
                                         L GEOMETRY TO DCS NODE
L GEOMETRY TO DCS NODE
    17 1
              17
                     304
18
                     305
                            1000
CTRL-FlImport ITAS_NC
                        ALT-F3AutoMLI UDC Allowed
                                                                  PgDn PgUp Home
                       Shift-F3AutoCHT
SHFT-FlImport Column
                                        Shift-F5Del/Pur
                                                                        End
                   F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    F1Save/Purge
ėëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit £
m SqNo FACTOR From
                     To
                            Cond. Value L/R Description
   19 1
             19
                     306
                            1000
                                         L GEOMETRY TO DCS NODE
20 1
              20
                     401
                            1000
                                             GEOMETRY TO BATTERY B NODE
D
                                             GEOMETRY TO BATTERY B NODE
D
    21 1
              21
                     402
                           1000
                                        L GEOMETRY TO BATTERY B NODE
    22 1
              22
                     403
                            1000
n
                                        L GEOMETRY TO BATTERY B NODE L GEOMETRY TO BATTERY B NODE
23 1
             23
                     404
                            1000
24 1
             24
                     405
                            1000
             25
                     406
                            1000
                                        L GEOMETRY TO BATTERY B NODE
                                        L GEOMETRY TO UPPER PLATE
L GEOMETRY TO UPPER PLATE
                    501
Б
    26 1
             26
                            1000
    27 1
             27
                     502
                            1000
L GEOMETRY TO UPPER PLATE
                           1000
    28 1
                    503
28
    29 1
             29
                    504
                           1000
                                        L GEOMETRY TO UPPER PLATE
p
                                        L GEOMETRY TO UPPER PLATE L GEOMETRY TO UPPER PLATE
    30 1
             30
                    505
                           1000
31 1
             31
                    506
                           1000
    32 1
             32
                    506
                           1000
                                        L GEOMETRY TO UPPER PLATE
                                        L GEOMETRY TO STRUCTURE NODE
33 1
             33
                     601
                           1000
                                         L GEOMETRY TO STRUCTURE NODE L GEOMETRY TO STRUCTURE NODE
    34 1
              34
                    602
                           1000
                           1000
35 1
             35
                    603
                                          L GEOMETRY TO STRUCTURE NODE
                     604
                           1000
             36
CTRL-F1Import ITAS NC ALT-F3AutoMLI UDC Allowed
                                                                  PgDn PgUp Home
SHFT-F1Import Column
                      Shift-F3AutoCHT
                                      Shift-F5Del/Pur
                                                                        End
    FlSave/Purge
                     F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
```

```
eëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
                              Cond. Value L/R Description
m SqNo FACTOR From
                      To
                                             L GEOMETRY TO STRUCTURE NODE
               37
                      605
                              1000
    37 1
                                                 GEOMETRY TO STRUCTURE NODE
               3.8
                      606
                              1000
0
    38 1
                                                GEOMETRY TO STRUCTURE NODE
    39
               39
                      607
                              1000
                              1000
                                                GEOMETRY TO STRUCTURE NODE
               40
                      608
    40 1
п
                              1000
                                            L GEOMETRY TO EPS NODE
    41 1
               41
                      701
                              1000
                                                GEOMETRY TO EPS NODE
    42 1
               42
                      702
п
                                            L GEOMETRY TO EPS NODE
                              1000
                      703
43 1
               43
                            1000
                                            L GEOMETRY TO EPS NODE
    44 1
               44
                      704
D
                                            L GEOMETRY TO EPS NODE
                                                                                      п
                      705
                              1000
               45
n
    45 1
                                             L GEOMETRY TO EPS NODE
46 1
               46
                      706
                              1000
                                                                                      .80453
                                            L BATTERY A NODE TO NODE
               201
47 1
                      202
                           .80453 L BATTERY A NODE TO NODE
.80453 L BATTERY A NODE TO NODE
.42287 L BATTERY A NODE TO NODE
.42287 L BATTERY A NODE TO NODE
.42287 L BATTERY A NODE TO NODE
1.62259 L BATTERY A NODE TO NODE
1.62259 L BATTERY A NODE TO NODE
1.62259 L BATTERY A NODE TO NODE
    48 1
               201
                      205
р
               201
                      203
    49 1
р
п
    50
               201
                      206
               202
    51 1
                      204
ь
    52 1
               202
                      203
               202
                      206
    53 1
n
    54 1
               203
                      205
п
ALT-F3AutoMLI UDC Allowed
                                                                       PgDn PgUp Home
CTRL-FlImport ITAS NC
SHFT-FlImport Column
                        Shift-F3AutoCHT
                                            Shift-F5Del/Pur
                                                                              End
                    F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
     FlSave/Purge
eëë Ctrl:Copyëëëëëëëëëëëë ITAS Conductor Data Entry eëëëëëëëëëëëë ESC:Quit f
                              Cond. Value L/R Description
m SqNo FACTOR From
                      To
                             .42287 L BATTERY A NODE TO NODE
    55 1
              203
                      204
                      206
                              .42287
                                             L BATTERY A NODE TO NODE
    56 1
               204
                                            L BATTERY A NODE TO NODE
    57 1
                              .49804
               204
                      205
ь
                             .49804
1.62259
                                            L BATTERY A NODE TO NODE
               205
                      206
    58 1
                             .53875
                                           L DCS NODE TO NODE
L DCS NODE TO NODE
    59 1
               301
                      302
                                                                                     .53875
    60 1
               301
                      305
                                                                                      ₽
                                            L DCS NODE TO NODE
    61 1
              301
                      303
                             .6896
b
                            .6896
    62 1
               301
                      306
                                            L DCS NODE TO NODE
                                            L DCS NODE TO NODE
              302
                             .53875
    63 1
                      304
                                                                                     \mathbf{n}
n
                            1.56727
    64 1
               302
                      303
                                             L DCS NODE TO NODE
D
                                                                                     Б
                                            L DCS NODE TO NODE
    65 1
              302
                      306
1.56727
                                            L DCS NODE TO NODE
              303
                      305
D
    66 1
                            .6896
.6896
.53875
                                            L DCS NODE TO NODE
L DCS NODE TO NODE
Б
    67 1
               303
                      304
D
    68 1
               304
                      306
                                           L DCS NODE TO NODE
    69 1
               304
                      305
                            1.56727
.80453
.80453
                                           L DCS NODE TO NODE
70 1
              305
                      306
                     402
                                           L BATTERY B NODE TO NODE
L BATTERY B NODE TO NODE
401
    72 1
               401
                      405
CTRL-F1Import ITAS_NC ALT-F3AutoMLI UDC Allowed SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur
                                                                     PgDn PgUp Home
SHFT-F1Import Column Shift-F3AutoCHT Shift-F5Del/Pur End F1Save/Purge F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F1OSearch
```

```
èëë Ctrl:Copyëëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit £
                                                 Cond. Value L/R Description
m SqNo FACTOR From
                                    To
                                                                         L BATTERY B NODE TO NODE
                                                .42287
                                    403
                       401
      73 1
                                                                          L BATTERY B NODE TO NODE
                                                 .42287
                        401
                                    406
                                                                         L BATTERY B NODE TO NODE
                                                 .42287
                                     404
                        402
                                                                         L BATTERY B NODE TO NODE
n
      75 1
                                              1.62259
1.62259
1.62259
.42287
.42287
.80453
1.62259
368.5
                                                 1.62259
                                     403
                        402
      76
D
                                                                       L BATTERY B NODE TO NODE
                                                                      L BATTERY B NODE TO NODE
L BATTERY B NODE TO NODE
L BATTERY B NODE TO NODE
L BATTERY P NODE TO NODE
L BATTERY P NODE TO NODE
L BATTERY B NODE TO NODE
L HEAT NODE TO BATTERY A
L HEAT NODE TO BATTERY A
                        402
                                     406
       77 1
                                     405
                       403
      78 1
n
                                     404
                       403
       79
                                     406
                       404
       80 1
n
                                     405
                       404
       81 1
                                     406
                        405
       82 1
201
                       1500
       83 1
                                     202
                                                 950.1
                        1500
       84 1
п
                                                                       L HEAT NODE TO BATTERY A
                                                 560.3
                                                                      L HEAT NODE TO BATTERY A
L HEAT NODE TO BATTERY A
L HEAT NODE TO BATTERY A
                        1500
                                     203
       85 1
                                                 368.5
                                     204
                        1500
       86 1
77
                                     205
                                                 950.1
                        1500
       87 1
                                     206
                                                 560.3
                        1500
       88 1
                                                                         L HEAT NODE TO DCS
L HEAT NODE TO DCS
\mathbf{r}
                                                 646.5
                                     301
                        1600
       89 1
aeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
                                     302
                                                 1077.5
                                                                                                                     PgDn PgUp Home
                                          ALT-F3AutoMLI UDC Allowed
CTRL-F1Import ITAS_NC
                                                                                                                                End
                                                                        Shift-F5Del/Pur
                                        Shift-F3AutoCHT
SHFT-FlImport Column
                                      F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
         FlSave/Purge
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëëë ESC:Quit £
                                                  Cond. Value L/R Description
m SqNo FACTOR From
                                     To
                                                                         L HEAT NODE TO DCS
                                                                                                                                             n
                                     303
                                                  1293
                         1600
                                                                        L HEAT NODE TO DCS
L HEAT NODE TO DCS
L HEAT NODE TO DCS
       91 1
                                                  646.5
                         1600
                                     304
       92 1
                                     305
                                                  1077.5
                         1600
       93 1
                                                  1293
                                     306
                         1600
                                                                        L HEAT NODE TO BATTERY B
                                              368.51 L HEAT NODE TO BATTERY B
905.1 L HEAT NODE TO BATTERY B
560.3 L HEAT NODE TO BATTERY B
368.51 L HEAT NODE TO BATTERY B
905.1 L HEAT NODE TO BATTERY B
560.3 L HEAT NODE TO BATTERY B
443.88 L BATTERY A TO LOWER PLATE
27.08 L BATTERY A TO LOWER PLATE
27.08 L BATTERY A TO LOWER PLATE
27.08 L BATTERY A TO LOWER PLATE
1149.3 L DCS TO LOWER PLATE
443.88 L BATTERY B TO LOWER PLATE
27.08 L BATTERY B TO LOWER PLATE
                                                  368.51
                                      401
                         1700
       95 1
                                     402
                         1700
                         1700
                                     403
       97 1
17
                                     404
                         1700
       98 1
       99 1
                         1700
                                     405
406
                         1700
     100 1
                      206
                                     102
     101 1
104
                         206
     102 1
                                     105
     103 1
                         206
\mathbf{n}
                         306
                                     101
     104 1
                                      103
                         406
     105 1
                         406
                                      106
     106 1
                                     107
      107 1
                         406
 PgDn PgUp Home
 CTRL-FIImport ITAS_NC ALT-F3AutoMLI UDC Allowed
                                                                          Shift-F5Del/Pur
 SHFT-FlImport Column Shift-F3AutoCHT
                                      F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
          FlSave/Purge
```

```
èëë Ctrl:Copyëëëëëëëëëëëëë ITAS Conductor Data Entry ëëëëëëëëëëëëëë ESC:Quit f
Cond. Value L/R Description
                                                                    п
                  To
m SqNo FACTOR From
                                   L EPS TO UPPER PLATE
L EPS TO UPPER PLATE
                                                                    502
n 109 1
           703
                        27.08
                                                                    п
                  503
                        27.08
 110 1
           703
                                    L EPS TO UPPER PLATE
                        7.791
  111 1
           703
                  504
D
                                   L EPS TO UPPER PLATE
                  505
                        7.791
                                                                    n
           703
  112 1
n
                                   L EPS TO UPPER PLATE
L EPS TO UPPER PLATE
                                                                    п
                       7.791
113 1
           703
                  506
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                  507
                        7.791
  114 1
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D
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ALT-F3AutoMLI UDC Allowed
Shift-F3AutoCHT Shift-F5Del/Pur
                                                         PgDn PgUp Home
                                                              End
                F2Help F3AutoGen F4Purge F5Delete F7Mark/UnMark F10Search
    FlSave/Purge
```

## APPENDIX V. BATTERY THERMAL ANALYSIS RESULTS

	ULTS REVIEW	•
âááááááááááááááááááááááááááááááááááááá	\$&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&	<b>********</b>
Date: 09/15/94		Time: 17:08:37.10
*********	******	******
Thermal Ana	lysis Parameters	##E====
The Thursday of the Transfer o		
<ol> <li>Solution Method:1.Steady-State</li> <li>Solution Time Step(mi.</li> <li>Final Time (minutes); if &lt;0 the</li> <li>Starting Temperature(Ke.</li> <li>Temperature Print Interval (minutes)</li> <li>No. of Iterations For Converge</li> </ol>	nutes) n no of orbs lvin ) nutes) nce (NLOOP)	0.10 1.00 300.00 20 9999
7. Temperature Unit 1:K, 2:C, 3:F 8. Solution Accuracy Parameter (no 9. Solution Convergence Parameter 10. Solution Tolerance (ARLXCA, DR. 11. Transient Solution Stability File 2. Include User-Defined Network	ot used)	130 1.30 0.00100 0.850
Use PgDn PgUp Home End F1:	Save F10Search For	ESCQuit/Main Menu
<pre>âáááááááááááááááááááááááááááááááááááá</pre>	JLTS REVIEW AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	N N N
<ol> <li>Thermal Analyses Without Orbits</li> <li>Stand-Alone Thermal Analyzer (18.</li> <li>No. of Isolated Cavities (RADK</li> </ol>	TAS-Format Models)	N
//////////////////////////////////////	//////////////////////////////////////	///////////////////////////////////////
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\	**************************************	**************************************
**************************************	*******	**************************************
Use PgDn PgUp Home End F15	Save FloSearch For	ESCQuit/Main Menu

Öááááááááááááááááááááááááááááááááááááá	RESULTS RI 666666666 *******	EVIEW 555555555555555555555555555555555555	6á6áááááááááá *************************	áááááááááááááá ***********************
Thermal A  1. Solution Method:1.Steady-Sta 2. Solution Time Step	Analysis : ate 2.Trai (minutes) then no of (Kelvin ) (minutes) rgence (N) 3:F, 4:R. (not use ter (not use) DRLXCA).	Parameters nsient 3. (1 f orbs LOOP) d)	182)	1 0.10 -1.00 300.00 20 9999 2 130 1.30 0.00100
11. Transient Solution Stability 12. Include User-Defined Network  Use PgDn PgUp Home End  Öááááááááááááááááááááááááááááááááááá	y Factor k() FlSave  áá PC-ITA: RESULTS R áááááááá	(not used) Y/N) FlOSearch F S åååååååååååååå EVIEW ååååååååååååååå Y/N)	For ESCQuit	adadadadadadada N
14. Print Transient Time/Tempera 15. Starting Temperatures Force 16. Thermal Analyses Without Orl 17. Stand-Alone Thermal Analyzes 18. No. of Isolated Cavities (RA	d (No.4)( bital Loa r (ITAS-F ADK files	Y/N)ds (Y/N) ormat Models )	5) 5)	·/////////////////////////////////////
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\	******** RBITAL IN ******	************** CIDENT & IR *******	**************************************	***************

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CHECKOUT PHASE OF PC-ITAS THERMAL ANALYSIS
TOTAL CARDS ENCOUNTERED:
                    2092
TOTAL THERMAL MASSES USED (W-Min/C)=
TOTAL THERMAL MASSES USED (BTU/F)=
                              7102.07
                              224.440
NO. OF THERMAL NODES=
ITAS STEADY-STATE SOLUTION ALGORITHM (SUCCESSIVE POINT ITERATION) PARAMETERS:
ARLXCA=0.10000E-02, DRLXCA=0.10000E-02 NLOOP= 9999
ITAS STEADY-STATE SOLUTION (SUCCESSIVE POINT ITERATION)
NO. OF ITERATIONS= 68 TOTAL INPUT ENERGY (W)= 9.6800
                            ( 53.303
 SYSTEM ENERGY BALANCE (W) = 5.1598
4= 33.74
                               3= 33.73 T
                     33.73 T
         33.71 T 2=
 T
     1 =
                                                  33.69
                                             8=
                               7=
                                    33.74 T
                       33.74 T
         33.74 T
                  6=
     5=
 \mathbf{T}
                                    33.69 T
                                            12=
                                                  33.69
                      33.69 T
                               11=
         33.68 T
                  10=
                       FlSave FlOSearch For ESCQuit/Main Menu
  Use PgDn PgUp Home End
RESULTS REVIEW
        1441 to 1458
33.72 T
        33.69 T 14= 33.72 T 15=
    33=
                                     33.69 T
                                             20=
                       33.72 T
                               19=
          33.72 T
                  18=
    17=
                                                  33.69
                                    33.70 T
                                             24=
                       33.70 T
                               23=
          33.70 T
                  22=
    21=
                                     33.08 T
                                             28=
                                                  33.08
                       33.08 T
                               27=
          33.69 T
                  26=
    25=
                                                  33.08
                                     33.08 T
                                             32=
                30=
          33.08 T
                               31 =
                       33.08 T
    29=
 T
                                     38.83 T
                                            36=
                                                  31.14
                       39.87 T
                               35=
          33.44 T
                 34=
    33=
 T
                                            40=
                                                  28.56
                       33.26 T
                                    33.26 T
                               39=
          30.79 T
                  38=
    37=
                                    33.97 T
                                                  33.00
                                             44=
                       33.00 T
                               43=
          33.00 T
                 42=
    41=
 T
                                           101=
                               47= -273.16 T
                       33.97 T
          33.00 T
                 46=
 T
    45=
                                     33.74 T
                                                  33.74
                                            105=
                              104=
                       33.74 T
          33.74 T
                 103=
    102=
 Т
                                                  33.69
                       33.74 T
                                     33.69 T
                                            202=
          33.74 T
                               201=
                 107=
 Ť
    106=
                                     33.69 T
                                            206=
                                                  33.70
                       33.69 T
                               205=
          33.69 T
                 204=
    203=
 T
                                     33.72 T
                                            304=
                                                  33.72
                               303=
          33.72 T
                       33.72 T
                 302=
    301=
                                     33.70 T
                                                  33.70
                                            402=
                       33.72 T
                               401=
                 306=
    305=
          33.72 T
 T
                                            406=
                                                  33.71
                       33.70 T
                                     33.69 T
                               405=
          33.70 T
                 404=
 T
    403=
                                                  33.08
                                            504=
                                     33.08 T
          33.08 T
                       33.08 T
                              503=
                 502=
 T
    501=
                                     33.08 T
                                            601=
                                                  33.44
                              507=
604=
                       33.08 T
          33.08 T
                 506=
    505=
                                                  30.79
                                     31.14 T
                       38.83 T
                                           605=
          39.87 T
                 603=
    602=
                        FlSave FlOSearch For ESCQuit/Main Menu
  Use PgDn PgUp Home End
```

```
RESULTS REVIEW
LINE NO.
        1459 to 1476
33.26 T 607= 33.26 T 608= 28.56 T 701=
                                                  33.00
   606=
                                            705=
         33.00 T
                       34.00 T
   702=
                703=
                              704=
                                     33.00 T
                                                   33.00
          34.00 T 1500=
                       33.69 T 1600=
   706=
                                     33.72 T 1700=
               ASCENDING NODE NUMBER : TEMPERATURE
************************
ITAS STEADY-STATE SOLUTION (SUCCESSIVE POINT ITERATION)
NO. OF ITERATIONS= 68 TOTAL INPUT ENERGY (W)= 9.6800
SYSTEM ENERGY BALANCE (W) = 5.1598 ( 53.303 %)
*****************
        33.710 T 2=
                       33.730 T 3= 33.730 T 4= 33.739
    1 =
         33.739 T
                        33.739 T
                                       33.739 T
                                                8 =
                                  7=
                                                     33.688
    5=
                   6=
                      33.688 T 11= 33.688 T 12=
        33.684 T 10=
                                                     33.687
        33.689 T
         33.689 T 14=
33.722 T 18=
33.697 T 22=
                                     33.716 T
T
                        33.721 T
                                15=
                                               16=
                                                     33.722
    13=
Т
    17=
                        33.716 T
                                 19=
                                       33.691 T
                                                20=
                                                     33.695
                        33.696 T
                                     33.696 T
T
    21=
                                 23=
                                               24=
                                                     33.692
         33.693 T 26=
33.080 T 30=
                      33.080 T
                                 27= 33.080 T
Т
    25=
                                               28=
                                                     33.080
                        33.080 T
                                       33.080 T
    29=
                                31=
                                                32=
                                                     33.080
  Use PgDn PgUp Home End
                        FlSave FlOSearch For ESCQuit/Main Menu
LINE NO. 1477 to 1494 RESULTS REVIEW
33= 33.439 T 34= 39.867 T 35= 38.828 T 36=
                                                     31.140
                  38=
                                39=
    37=
         30.790 T
                       33.259 T
                                     33.260 T
33.972 T
                                               40=
                                                     28,561
         32.996 T
32.996 T
                       32.996 T
33.966 T
                                43= 33.972 T
47= -273.159 T
                 42=
46=
    41=
                                               44=
                                                     32.996
                                             101=
Т
   45=
                                                     33.740
   102=
        33.740 T 103=
                       33.740 T 104= 33.740 T
                                              105=
                107=
T
         33.740 T
                        33.740 T
   106=
                                201= 33.689 T
                                               202=
                                                     33.687
         33.689 T
                        33.688 T
                                       33.688 T
T
   203=
                  204=
                                205=
                                               206=
                                     33.722 T
                        33.719 T
         33.722 T
                                303=
T
   301=
                  302=
                                              304=
                                                     33.722
                 306=
Т
   305=
         33.719 T
                       33.719 T
                                401= 33.696 T
                                              402=
                                405=
503=
                                     33.695 T
33.080 T
                        33.697 T
T
   403=
         33.697 T
                 404=
                                              406=
                                                     33.706
                502=
                        33.080 T
T
         33.080 T
                                              504=
   501 =
                                                     33.080
                                     33.080 T
                       33.080 T
                                507=
Ţ
   505=
         33.080 T 506=
                                              601=
                                                     33.440
T
   602=
         39.870 T
                  603=
                       38.830 T
                                604= 31.140 T
                                              605=
                                                     30.790
   606=
         33.260 T
                  607=
                        33.260 T
                                608=
                                      28.560 T
                                               701=
                                                     33,000
                 703=
         33.000 T
                                704=
Т
   702=
                        34.000 T
                                      33.000 T
                                               705=
                                                     33.000
        34.000 T 1500=
                       33.691 T 1600=
                                      33.722 T 1700=
   706=
                                                    33.698
               ASCENDING NODE NUMBER : IMPRESSED Q
    1 =
         0.000 0
                                      0.000 Q
                 2= 0.000 Q
                                                     0.000
                                                4 =
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								^^
F	aDn Paup	Home End	ITAS Time	( ) / Tempe	erature ( )	. Keznira	******	e e e e e e e e e e e e e e e e e e e
è	ĕëëëëëëëë	ëëëëëëëëë	TTAS TIME Eëëëëëëëëëë	8888888888		jáááááááAPlo	F Elans	(X or Y) m
_	Tempáááá	¢ ÖááNode			,	Jaaaaaaario	t Flags	(2 01 1) =
	_	• •					201	202
_		• 103	104	105	106	107	201	33.71
-		a 33.74	33.74	33.74	33.74	33.74	33.71	
-		33.74	33.74	33.74	33.74	33.74	33.71	33.71n
-		33.74	33.74	33.74	33.74	33.74	33.71	33.71¤
		33.74	33.74	33.74	33.74	33.74	33.71	33.71¤
I		33.74	33.74	33.74	33.74	33.74	33.72	33.71m
ĸ		33.74	33.74	33.74	33.74	33.74	33.72	33.71¤
I		33.74	33.74	33.74	33.74	33.74	33.72	33.71□
r		33.74	33.74	33.74	33.74	33.74	33.71	33.71¤
	77.95		33.74	33.74	33.74	33.74	33.71	33.71¤
ľ		33.74		33.74	33.74	33.74	33.71	33.71¤
ľ	81.95	33.74	33.74		33.74	33.74	33.71	33.71
I	83.95	33.74	33.74	33.74		33.74	33.71	33.71
ľ	85.95	33.74	33.74	33.74	33.74	-	33.71	33.71
I	87.95	33.74	33.74	33.74	33.74	33.74	33.71	33.71¤
	89.95	33.74	33.74	33.74	33.74	33.74		
	91.95	33.74	33.74	33.74	33.74	33.74	33.71	33.71
		33.74	33.74	33.74	33.74	33.74	33.71	33.71¤
		00 74	22 74	22 74	33.74	33.74	33.71	33.71
	92.33	#1.cc 48888888	33.74 • • • • • • • • • • • • • • • • • • •	******	eëëëëëëëëë	ëëëëëëëëëë	ëëëëëëëë	e e e e e e e e e e e e e e e e e e e
č	166666666							
		ו-פ	F3Save Ascri	TASAIDI	ot F8Page	Left F9Paq	eRight	ESCQuit
	FlPlot	Lauero :	Dave Diner	y resource	00 - 0- <del>- 3</del> -		-	
		•		-				
			TOTAL TIME	/ \ / Tomp	erature /	Results		~ ~
1			TOTAL TIME	/ \ / Tomp	erature (	) Results ēēāēēēēēēēē	ëëëëëëëë	-^ :e <b>ëëëëë</b> ëëë£
é	PgDn PgUp Beeeëëëëëë	Home End		/ \ / Tomp	erature (	) Results ēēāēēēēēēēē	ëëëëëëëë	-^ :e <b>ëëëëë</b> ëëë£
é	PgDn PgUp Beeeëëëëëë	Home End jeëëëëëëëë i¢ ÖááNode	TOTAL TIME	/ \ / Tomp	erature (	Results	ëëëëëëëë	-^ :e <b>ëëëëë</b> ëëë£
1	PgDn PgUp Bëëëëëëëëë Tempáááá	Home End Beëëëëëëëëë A¢ ÖááNode	ITAS Time Seeseseses	( ) / Temp Beeeëëëëëë	erature ( ëëëëëëëëëë	) Results ëëëëëëëëëë ÖááááááááPlo	<b>ëëëëëëë</b> t Flags	eëëëëëëëë (X or Y) p
3	PgDn PgUp Beëëëëëëë Tempáááá	Home End Beeseseses C ÖááNode	ITAS Time Seeseseses 204	( ) / Temp Beeëëëëëëë 205	erature ( ëëëëëëëëë 206	) Results ëëëëëëëëëë ÖááááááPlo 301	<b>eeeee</b> ee t Flags 302	eëëëëëëëë (X or Y) m m 303m
3	PgDn PgUp Bëëëëëëëëë Tempáááá	Home End éëëëëëëëëë ᢠÖááNode	ITAS Time Seeseeseese 204 33.71	( ) / Temp seseseses 205 33.71	erature ( ëëëëëëëëë 206 33.71	) Results ĕĕëëëëëëëë ÖáááááááPlo 301 33.72	<b>eeeeee</b> t Flags 302 33.72	200
3	PgDn PgUp Bëëëëëëëëë Tempáááá Time	Home End Beeseseses C ÖááNode	ITAS Time 888888888888888888888888888888888888	() / Temp sessessesses 205 33.71 33.71	erature ( ëëëëëëëëëë 206 33.71 33.72	) Results ëëëëëëëëëëë ÖáááááááPlo 301 33.72 33.72	ëëëëëëë t Flags 302 33.72 33.72	303¤ 33.72¤ 33.72¤
3	PgDn PgUp Peëëëëëëëë Tempáááá Time 63.95	Home End seeseeseese ¢ ÖááNode  203 å 33.71	ITAS Time Seeseeseese 204 33.71	() / Temp seeseeseese 205 33.71 33.71 33.71	erature ( ëëëëëëëëëë 206 33.71 33.72 33.72	) Results ëëëëëëëëëë ÖáááááááPlo 301 33.72 33.72 33.73	ëëëëëëë t Flags 302 33.72 33.72 33.72	303 33.72 33.72 33.73 33.73
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	PgDn PgUp Beëëëëëëëë Tempáááá Time 63.95 65.95	Home End deceeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee	ITAS Time 888888888888888888888888888888888888	() / Temp seeseeseese 205 33.71 33.71 33.71 33.71	erature ( ëëëëëëëëëë 206 33.71 33.72 33.72 33.72	) Results ëëëëëëëëëë ÖáááááááPlo 301 33.72 33.72 33.73 33.73	**************************************	303m 303m 33.72m 33.72m 33.73m 33.73m 33.73m
3 3 3 3 3 3	PgDn PgUp Beëëëëëëëëë Tempáááá Time 63.95 65.95 67.95	Home End eëëëëëëëëëë ¢ ÖááNode ° 203 å 33.71 33.71 33.71	ITAS Time BEBEEEEEEEE 204 33.71 33.71 33.71	() / Temp seeseeseese 205 33.71 33.71 33.71	206 33.71 33.72 33.72 33.72 33.72	) Results ëëëëëëëëëë ÖáááááááPlo 301 33.72 33.72 33.73 33.73	eeeeeeee t Flags 302 33.72 33.72 33.73 33.73	303 33.72 33.72 33.72 33.73 33.73 33.73 33.73 33.73
3 3 3 3 3 3 1 1	PgDn PgUp beëëëëëëëëëë Tempáááá Time 63.95 65.95 66.95 69.95	Home End eĕĕĕĕĕĕĕĕ a¢ ÖááNode • 203 a 33.71 33.71 33.71 33.72	204 33.71 33.71 33.71 33.71 33.71 33.71	() / Temp seeseeseese 205 33.71 33.71 33.71 33.71	erature ( ëëëëëëëëëë 206 33.71 33.72 33.72 33.72	) Results ĕĕĕĕĕĕĕĕëë ÖááááááAPlo 301 33.72 33.72 33.73 33.73 33.73	**************************************	303m 303m 33.72m 33.72m 33.73m 33.73m 33.73m 33.73m 33.73m
3 3 3 3 3 3 1 1	PgDn PgUp Beëëëëëëëëë Tempáááá Time 63.95 65.95 66.95 69.95 71.95	Home End eĕĕĕĕĕĕĕĕ a¢ ÖááNode . 203 a 33.71 33.71 33.71 33.72 33.72	204 33.71 33.71 33.71 33.71 33.72 33.72	() / Temp seeseeseese 205 33.71 33.71 33.71 33.71 33.72	206 33.71 33.72 33.72 33.72 33.72	) Results ëëëëëëëëëë ÖáááááááPlo 301 33.72 33.72 33.73 33.73	302 33.72 33.72 33.72 33.73 33.73 33.73 33.73	303 m 303 m 303 m 33.72 m 33.73 m 33.73 m 33.73 m 33.73 m 33.73 m 33.73 m
	PgDn PgUp Beëëëëëëëëëë Tempáááá Time 63.95 65.95 66.95 69.95 71.95 73.95	Home End e e e e e e e e e e e e e e e e e e e	204 33.71 33.71 33.71 33.71 33.72 33.72	205 33.71 33.71 33.71 33.71 33.72 33.72 33.72	206 33.71 33.72 33.72 33.72 33.72 33.72 33.72 33.72	) Results ĕĕĕĕĕĕĕĕëë ÖááááááAPlo 301 33.72 33.72 33.73 33.73 33.73	**************************************	303 m 303 m 303 m 33.72 m 33.72 m 33.73 m 33.73 m 33.73 m 33.73 m 33.73 m 33.73 m
	PgDn PgUp Beëëëëëëëëëë Tempáááá Time 63.95 65.95 69.95 69.95 71.95 77.95	Home End eëëëëëëëë¢ ÖááNode ° 203 â 33.71 33.71 33.72 33.72 33.72 33.72 33.72 33.72	204 33.71 33.71 33.71 33.71 33.72 33.72 33.72 33.72	() / Temp seeeeeeeee 205 33.71 33.71 33.71 33.72 33.72 33.72 33.71	206 33.71 33.72 33.72 33.72 33.72 33.72 33.72 33.72 33.72	) Results ĕĕĕĕĕĕĕĕëë ÖááááááAPlo 301 33.72 33.72 33.73 33.73 33.73 33.73	302 33.72 33.72 33.72 33.73 33.73 33.73 33.73	303 303 33.72 33.72 33.73 33.73 33.73 33.73 33.73 33.73 33.73 33.73 33.73 33.73
	PgDn PgUp Beëëëëëëëëëë Tempáááá Time 63.95 65.95 67.95 71.95 77.95 77.95	Home End deeëëëëëëë a¢ ÖááNode  203 a 33.71 33.71 33.72 33.72 33.72 33.72 33.72 33.71	204 33.71 33.71 33.71 33.71 33.72 33.72 33.72 33.72 33.71 33.71	() / Temp seeeeeeeee 205 33.71 33.71 33.71 33.72 33.72 33.72 33.71 33.71	206 33.71 33.72 33.72 33.72 33.72 33.72 33.72 33.72 33.71	) Results ĕĕĕĕĕĕĕĕëë ÖááááááAPlo 301 33.72 33.73 33.73 33.73 33.73 33.73 33.73 33.73	302 33.72 33.72 33.72 33.73 33.73 33.73 33.73 33.72 33.72	303 m 303 m 303 m 33.72 m 33.72 m 33.73 m 33.73 m 33.73 m 33.73 m 33.73 m 33.73 m 33.73 m 33.73 m
	PgDn PgUp Beëëëëëëëëëë Tempáááá Time 63.95 65.95 67.95 71.95 77.95 77.95 81.95	Home End deeëeëeëeë de ÖááNode ° 203 a 33.71 a 33.72 a 33.72 a 33.72 a 33.72 a 33.71	204 33.71 33.71 33.71 33.72 33.72 33.72 33.72 33.71 33.71 33.71	() / Temp Beeseesese 205 33.71 33.71 33.71 33.72 33.72 33.72 33.71 33.71	206 33.71 33.72 33.72 33.72 33.72 33.72 33.72 33.72 33.71 33.71	) Results ĕĕĕĕĕĕĕĕĕë ÖááááááAPlo 301 33.72 33.73 33.73 33.73 33.73 33.73 33.73 33.72 33.72	302 33.72 33.72 33.72 33.73 33.73 33.73 33.73 33.72 33.72 33.72	303 33.72 33.72 33.73 33.73 33.73 33.73 33.73 33.73 33.73 33.73 33.73 33.73 33.73 33.73 33.73
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<u> </u>	73.95	33.73	33.73	33.73	33.72	33.72	33.72	33.72
<u> </u>	75.95	33.73	33.72	33.72	33.72	33.72	33.72	33.72
<u>n</u>	77.95	33.73	33.72	33.72	33.72	33.72	33.72	33.720
<u> </u>	79.95	33.72	33.72	33.72	33.71	33.72	33.71	33.712
<u> </u>	81.95	33.72	33.72	33.72	33.71	33.71	33.71	33.71
<u>n</u>	83.95	33.72	33.72	33.72	33.71	33.71	33.71	33.710
<u></u>	85.95	33.72	33.72	33.72	33.71	33.71	33.71	33.71
<u></u>	87.95	33.72	33.72	33.72	33.71	33.71	33.71	33.71
<u> </u>	89.95	33.72	33.72	33.72	33.71	33.71	33.71	33.71
D	91.95	33.72	33.72	33.72	33.71	33.71	33.71	33.71
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TOTAL SURFACES IN THIS MODEL= 46
       PC-ITAS Summary of Input Parameters
   These parameters reflect the latest values assigned to them
Date: 09/17/94
                      Time: 18:30:45 10
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Thermal Analysis Parameters
0.10
                        -1.00
                       300.00
 Starting Temperature .....(Kelvin ).....
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6.
                         20
                        9999
7. Temperature Unit 1:K, 2:C, 3:F, 4:R.....
 Use PaDn PaUp Home End
           FlSave FlOSearch For ESCOuit/Main Menu
RESULTS REVIEW
·LINE NO.
    19 to 36
8. Solution Accuracy Parameter (not used).....
                        130
1.30
                       0.00100
0.850
13. Print RADK, POWER......(Y/N).....
14. Print Transient Time/Temperature...(Y/N).....
15. Starting Temperatures Forced (No.4)(Y/N).....
18. No. of Isolated Cavities (RADK files)......
*ITAS THERMAL ANALYSIS*
Use PgDn PgUp Home End
           FlSave FlOSearch For ESCQuit/Main Menu
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¤	٠. و	8.4	28.48	28.48	28.48	28.49	8.6	9.22
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PgI	gDn PgUp	Home	2G)	ITAS Time	( ) / Tempe	Temperature ( ĕëëëëëëëëëëëë	) Results	8888888	38866666666666666666666666666666666666
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n	σ,	2	7.18	27.19	27.19	27.18	27.34	27.06	27.07¤
	9	2	7.3	27.38	27.38	27.37	27.52	27.18	27.19¤
Þ	6	2	7.55	27.56	27.56	27.55	27.70	27.30	27.31¤
Ħ		2	7.7	27.74	27.73	27.73	27.87	27.42	27.43¤
n	9	2	7.9	27.91	27.91	27.90	28.04	27.54	27.55¤
	3.9	2	8.0	28.08	28.07	28.07	28.20	27.65	27.66¤
a	5	2	8.23	28.24	28.23	28.23	28.35	27.77	27.77¤
D	7.9	2	8.3	28.39	28.39	28.38	28.50	27.88	27.88¤
Þ	9.9	2	8.53	28.54	28.54	28.53	28.65	27.98	27.99¤
p	9.1	2	9.8	28.69	28.68	28.68	28.79	8.0	28.10¤
0	3.9	2	8.8	28.83	28.82	28.82	28.93	28.19	28.20¤
p	25.95	2	6	28.96	28.96	28.96	29.06	28.29	
D	7.9		0	29.10	29.09	29.09	29.19	28.39	28.40¤
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			30.68	30.66	30.69	30.68	30.68	30.72	31.75¤
			9.0	30.66	30.69	30.68	30.68	30.72	31.75¤
	6		9.0	30.66	30.70	30.69	30.68	30.72	31.75¤
מו	6		0.7	30.66	30.70	30.69	30.69	30.72	31.76¤
( <b>1</b> 2	i m		0.7	0	30.70	30.69	30.69	30.72	31.76¤
I D	T.		0.7	9.0	30.71	30.69	30.69	30.72	31.76¤
1 10	7.9		0.7		30.71	30.70	30.69	30.72	31.76¤
. 10	6		0	9.0	0.7	30.70	30.69	30.72	31.76¤
1 12	0		0	0.6		30.70	30.70	30.72	31.76¤
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םו	· LO		0	0	30.72	30.70	30.70	30.72	31.76¤
	6.7		0	30.66	30.72	30.70	30.70	30.72	31.76¤
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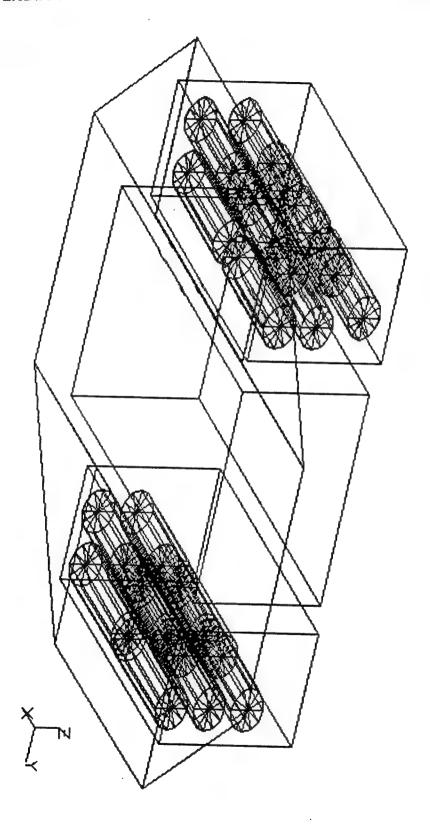
S-F3Save ASCII F1Plot F2Help F3Save Binary F4SelPlot F8PageLeft F9PageRight ESCQuit

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¤	3,95	31	.72	31.75	31.75	31.72	31.69	30.69	30.70¤
¤	5.95	31	.71	31.76	31,75	31.71	31.67	30.69	30.71¤
¤	7.95	31	.71	31.76	31.76	31.71	31.65	30.70	30.71¤
ם	9.95	31	.71	31.77	31.76	31.71	31.64	30.70	30.72¤
	11.95	31	.70	31.77	31.77	31.70	31.63	30.70	30.72¤
¤	13.95	31	.70	31.77	31.77	31.70	31.62	30.70	30.73¤
	9	31	.70	. 7	31.77	31.70	31.61	30.71	30.73¤
	7.9	31	.70	31.78	31.77	31.70	31.61	30.71	30.73¤
	9.9	31	69.	31.78	31.78	31.69	31.60	30.71	30.74¤
	21,95	31	69.	31.78	31.78	31.69	31.60	30.71	30.74¤
¤	3.9	31	.69	31.78	31.78	31.69	31.59	30.72	30.74¤
p	25.95	31	. 69	31.78	31.78	31.69	31.59	30.72	30.75¤
n	9.	31	.68	31.78	31.78	31.68	31.59	30.72	30.75¤
¤	29.95	31	.68	31.78	31.78	31.68	31.58	30.72	30.75¤
	31.95	31	.68	31.78	31.78	31.68	31.58	30.73	30.75¤
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n	1.95	30	.69	30.69	30.68	30.74	33.08	33.08	33.08¤
п	3.95		.70	30.70	30.67	30.74	33.08	33.08	33.08m
<u> </u>	5.95	0	.70	30.70	30.67	30.73	33.08	33.08	33.08¤
	7.95		.71	30.70	30.67	30.73	33.08	33.08	33.08¤
<b>n</b>		0	_	30.71	30.67	30.73	33.08	33.08	33.08m
			.71	30.71	30.67	30.73	33.08	33.08	33.08m
	13.95		.72	30.72	30.67	30.73	33.08	33.08	33.08m
	15.95		.72	30.72	30.67	30.73	33.08	33.08	33.08¤
	7.9		.72	30.72	30.67	30.73	33.08	33.08	33.08m
n	19.95	30	.73	30.73	30.67	30.73	33.08	33.08	33.08¤
	1.9		.73	30.73	30.67	30.73	33.08	33.08	33.08¤
	3.9		.73	30.73	30.67	30.73	33.08	33.08	33.08¤
n			.74	30.74	30.67	30.73	33.08	33.08	33.08¤
	7.9	30	.74	30.74	30.67	30.74	33.08	33.08	33.08¤
n	9.6	30	.74	30.74	30.67	30.74	33.08	33.08	33.08¤
	31.95	30	.74	30.74	30.68	30.74	33.08	33.08	33.08¤
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# APPENDIX W. BATTERY THERMAL MODEL (INWARD VIEWING)



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